UK MET OFFICE
GLOBAL DATA MONITORING REPORT

January 2005

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1. Introduction

As the WMO-appointed lead centre for monitoring surface marine data, the U.K. Meteorological Office produces monthly statistics on the quality of these observations received at RSMC Exeter. This report includes this information along with statistics for most other types of data. The figures and tables contained herein are presented according to the agreed standards for the exchange of monitoring results.

The report is based on data received at the UK Meteorological Office Headquarters, Exeter in time for inclusion into the appropriate analysis (the current cut-off time is approximately 7.2 hours after each analysis time). The evaluation of data quality is based on comparison with the appropriate 6-hour global model forecast (background) field, although to provide background values valid at the observation time for non-main hour data, time-interpolation of the T+3, T+6 and T+9 forecasts is used; and for sea surface temperature the background field is the analysis from the previous day. Generally, the background field is of high quality except in data sparse areas, tropical regions and areas close to steep orography where care should be taken in interpreting the statistics shown.

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2 Global Data Monitoring Statistics

Ships, Fixed buoys, Platforms and Drifting buoys observations

TABLES 1and 2 contain lists of the stations which are considered to have returned suspect observations of pressure, windspeed, wind direction or sea surface temperature, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 1 and 2 show 10 degree lat/long box average numbers of SHIP/SYNOP and DRIFTER observations received per day throughout the month at Exeter and assimilated into model runs. All data are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Synop Observations

Table 3 contains a list of stations which are considered to have returned suspect observations of Pressure during the month. The criteria for quality control are given in the header page. The reporting practice of each station is included in the list of statistics.

At the UK Met. Office, we monitor SYNOP pressure after it has been interpolated to our Global NWP Model's surface height. For most synoptic stations (about 75%), the surface pressure (at the model surface) is calculated from the reported station-level pressure, or, if this is not available, the height of a standard pressure-level (e.g. 850 hPa or 700 hPa). If neither of these are available, or if the reported station-level pressure is deemed unreliable, the reported mean sea-level pressure is used (about 25% of SYNOPs).

Aircraft observations

Tables 4A (300-150 hPa) and 4B (1000-301 hPa) contain lists of statistics calculated from data received from all airline carriers.

Figures 3A (300-150 hPa) and 3B (1000-301 hPa) show 10 degree lat/long box average numbers of aircraft reports in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS) received per day throughout the month at Exeter and assimilated into model runs. Observations with a vector wind difference (compared with the model background field) of >60 m s^{-1} have been excluded. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

Figures 4A-7A (300-150 hPa) and 4B-7B (1000-301 hPa) show wind statistics for AIREP/ASDAR in AIREP/AMDAR code (including AIREP, ACAR, AMDAR, ASDAR and ADS). Observations with a vector wind difference > 60 m s^{-1} have been excluded. Statistics have not been calculated for 10 degree lat/long boxes containing <31 observations.

Figure	Parameter
4	Mean wind vectors
5	Mean observation - background wind vector
6	Mean observation-background speed (m s^{-1})
7	RMS observation-background vector (m s^{-1})

Radiosonde Observations

TABLES 5-7 contain lists of the stations which are considered to have returned suspect observations of geopotential height, vector wind or wind direction, as appropriate, during the month. The criteria for quality control are given on the header page for each table.

Figures 8 and 9 show 10 degree lat/long box average numbers of TEMP 500 hPa GEOPOTENTIAL HEIGHT and TEMP/PILOT 300 hPa WIND observations received per day throughout the month at Exeter and assimilated into model runs. Data from all hours are included. Box average values are plotted as the nearest whole number (values of x.5 are rounded up). Where the average is more than 999, then 999 is plotted. A box with no observations is blank. If the 24 hour average >0 but <0.5, then 0 is plotted.

APPENDIX I shows details of the gross error limits used in TABLES 5 and 6 and the weights used in the RMS values in TABLE 5.

Satellite Observations

Figures 10-24 show satellite wind statistics for all geostationary satellites. All plots other than **AVAILABILITY** show average data where there are > 10 observations in a 10 degree lat/long box.

Figure	Parameter Plotted	Layer (hPa)
10	Availability/average daily number	701-1000
11	Vector mean wind (observed)	701-1000
12	Observation-background vector wind difference	701-1000
13	Mean observation-background speed differences	701-1000
14	RMS observation-background vector difference	701-1000
15	Availability/average daily number	401-700
16	Vector mean wind (observed)	401-700
17	Observation-background vector wind difference	401-700
18	Mean observation-background speed differences	401-700
19	RMS observation-background vector difference	401-700
20	Availability/average daily number	101-400
21	Vector mean wind (observed)	101-400
22	Observation-background vector wind difference	101-400
23	Mean observation-background speed differences	101-400
24	RMS observation-background vector difference	101-400

Figures 25-39 show sounding statistics from the polar orbitting satellite NOAA-15. Figure 25 shows the mean daily number of ATOVS soundings, and figures 26-39 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
26	Mean	Surface (HIRS8)
27	SD	Surface (HIRS8)
28	Mean	700 (HIRS15)
29	SD	700 (HIRS15)
30	Mean	500-700 (HIRS11)
31	SD	500-700 (HIRS11)
32	Mean	400 (HIRS4)
33	SD	400 (HIRS4)
34	Mean	700 (AMSUA5)
35	SD	700 (AMSUA5)
36	Mean	300 (AMSUA7)
37	SD	300 (AMSUA7)
38	Mean	100 (AMSUA9)
39	RMS	100 (AMSUA9)

Figures 40-54 show sounding statistics from the polar orbitting satellite NOAA-16. Figure 40 shows the mean daily number of ATOVS soundings, and figures 41-54 show mean and standard deviation observation-background differences for brightness temperature, for selected channels.

Figure		Weighting function peak (hPa)
41	Mean	Surface (HIRS8)
42	SD	Surface (HIRS8)
43	Mean	700 (HIRS15)
44	SD	700 (HIRS15)
45	Mean	500-700 (HIRS11)
46	SD	500-700 (HIRS11)
47	Mean	400 (HIRS4)
48	SD	400 (HIRS4)
49	Mean	700 (AMSUA5)
50	SD	700 (AMSUA5)
51	Mean	300 (AMSUA7)
52	SD	300 (AMSUA7)
53	Mean	100 (AMSUA9)
54	RMS	100 (AMSUA9)

Figures 55-69 show sounding statistics from the polar orbitting satellite NOAA-17. Figure 55 shows the mean daily number of ATOVS soundings, and figures 56-69 show mean and standard deviation observation-background differences for brightness temperature for selected channels.

Figure		Weighting function peak (hPa)
56	Mean	Surface (HIRS8)
57	SD	Surface (HIRS8)
58	Mean	700 (HIRS15)
59	SD	700 (HIRS15)
60	Mean	500-700 (HIRS11)
61	SD	500-700 (HIRS11)
62	Mean	400 (HIRS4)
63	SD	400 (HIRS4)
64	Mean	700 (AMSUA5)
65	SD	700 (AMSUA5)
66	Mean	300 (AMSUA7)
67	SD	300 (AMSUA7)
68	Mean	100 (AMSUA9)
69	RMS	100 (AMSUA9)

N.B. All satellite sounding data is bias-corrected (and thinned) before being assimilated in the UKMO NWP model.

3 Composite Observing Systems for the North Atlantic (COSNA)

This section shows statistics for upper air (radiosonde and aircraft) and surface (drifter) data for the North Atlantic area for data received at Exeter during the month.

TABLE 8 shows quality statistics for **Mean Sea-level Pressure, Windspeed and Wind Direction** received at Exeter in DRIFTER code during the month for the area 10°N - 80°N, 85°W - 0°W.

TABLE 9 shows quality statistics for **Temperature and Vector Wind** received at Exeter from aircraft during the month for the area 40°N - 70°N, 60°W - 0°W.

Table 10 - 13 show quality statistics **(Geopotential Height and Windspeed at 100 and 500 hPa)** for all TEMPSHIPS in the area bounded by 0°N - 90°N, 100°W - 40°E and selected TEMP stations within the same area.

Revisions

1. May 95 Monitoring statistics for NOAA-11 removed. Figures 25-27 now show data for NOAA-12
2. May 95 Notes giving details of observations included in wind direction statistics clarified and corrected.
3. August 95 Monitoring statistics for NOAA-14 added with figures 28-30.
4. February 96 Monitoring statistics for GOES-7 have been replaced by statistics for GOES-8 and GOES-9.
5. April 96. 500 km and 120 km SATEMs replaced by 120 km resolution temperature profiles produced locally from the radiances disseminated by NESDIS.
6. February 97 Monitoring statistics for Meteosat 5 have been replaced by statistics for Meteosat 6.
7. Sept 97 Monitoring statistics for NOAA-12 removed. Figures 25-27 now show data for NOAA-11
8. January 1998. Increase in resolution of UKMO global forecast model.
9. April 1998. GOES winds ceased on 2nd March 1998, and were replaced with GOES high resolution winds from 15th.
10. June 1998. Monitoring statistics for Meteosat-6 were replaced by monitoring statistics for Meteosat-7, from 3rd June.
11. June 1998. Corrections in our processing of radiosonde data resulted in a decrease in the number of 500hPa geopotential heights in Figure 8 of about 230 per 24 hours (compared with previous reports), and a small increase in the number of 300hPa winds in Figure 9.
12. July 1998. Meteosat-5 began transmitting winds from 2nd July, at 63 degrees East (over the Indian ocean), and this data is included in the statistics.
13. July 1998. GOES-9 (at 135W) was replaced mid-month by GOES-10 (initially at 105W, moving towards 135W).
14. February 1999. Problems with NOAA-11, and TOVS data ceased to be assimilated from 26 February.
15. March 1999. UKMO introduced 3-D VAR assimilation system on 29 March, and also began assimilating ATOVS data from NOAA-15.
16. May 1999. Included statistics for ATOVS sounding data from NOAA-15.
17. September 1999. Included statistics for high resolution visible winds from Meteosat-5 and Meteosat-7.
18. October 1999. The 3-D VAR assimilation system was upgraded on 19 October, including improvements in the assimilation of ATOVS radiances, use of SSM/I surface wind speed, an improvement in the calculation of surface pressure for SYNOPs, and thinning and revision of observation errors of aircraft data.
19. November 1999. High resolution visible winds from Meteosat-5 and Meteosat-7 removed until used operationally.
20. April 2000. Aireps in Table 4 and Figures 3-7 split into ranges 300-150 hPa (A) and 1000-301 hPa (B).
21. September 2000. Corrected an error affecting the mean positions of a minority of buoys in Table 2.
22. November 2000. An error in the production of Table 6 was corrected. Previously, some sondes with suspect vector winds were being missed.
23. April 2001. Included statistics for ATOVS sounding data from NOAA-16.
24. May 2001. Included statistics for sea surface temperatures from marine surface observations.
25. December 2002. Included statistics for ATOVS sounding data from NOAA-17.
26. December 2002. Meteosat-7 and Meteosat-5 SATOB winds replaced by higher resolution BUFR-coded winds.
27. November 2003. Included temperature and relative humidity statistics for ships, fixed buoys and platforms in Table 1.
28. November 2003. NOAA 17 statistics no longer available due to malfunction of the AMSU-A instrument.

TABLE 1

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SHIPS, FIXED BUOYS AND PLATFORMS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for ships, fixed buoys and platforms.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours

Elements monitored :Mean sea level pressure (hPa).
:Wind speed ($m\ s^{-1}$).
:Wind direction (Degrees).
:Air temperature (Degrees C).
:Relative Humidity (%).
:Sea surface temperature (Degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ :Percentage of observations flagged excluding those with gross errors.

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)
:25 $m\ s^{-1}$ (vector wind)
:15 degrees (air temperature)
:10 degrees (sea surface temperature)

SELECTION CRITERIA :NOBS ≥ 20 , and one or more of the following:

1.|bias|	≥ 4 hPa	(pressure),
	≥ 5 $m\ s^{-1}$	(wind speed),
	≥ 30 degrees	(direction).
	≥ 3 degrees	(sea surface temperature).
	≥ 4 degrees	(air temperature)
	≥ 15%	(relative humidity)
2.SD	≥ 6 hPa	(pressure),
	≥ 80 degrees	(direction).
	≥ 5 degrees	(sea surface temperature).
	≥ 6 degrees	(air temperature)
	≥ 25%	(relative humidity)
3.PGE	≥ 25	

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CF3	P	35	0	0	1.2	-5.7	5.8
A8FA5	P	28	0	0	1.8	5.7	6.0
A8FG5	P	25	0	80	2.0	-4.0	4.5
C6TC2	P	25	0	92	0.7	4.8	4.8
DEAZ	P	23	0	65	0.6	4.4	4.5
DIIN	P	63	2	78	2.6	4.2	4.9
ELYG6	P	34	0	62	2.4	4.2	4.9
KS012	P	22	0	82	0.6	-5.6	5.6
KS049	P	28	0	89	0.9	-5.2	5.3
LMWO3	P	32	0	22	2.2	-4.0	4.6
MXBC6	P	46	0	54	1.7	-4.2	4.5
TEST	P	64	100	100			
UCUF	P	47	0	57	4.3	-4.8	6.4
UDDE	P	27	7	100	3.9	-4.0	5.6
UGGA	P	33	36	85	9.1	-0.6	9.1
UGNQ	P	31	0	58	3.9	-4.0	5.6
VTKZ	P	21	0	100	0.7	-7.8	7.8
VTSQ	P	23	0	39	0.8	-4.3	4.4
VTXK	P	20	0	100	1.6	4.2	4.5
VTXL	P	28	14	100	4.2	6.2	7.5
V2GR	P	29	0	0	1.2	4.5	4.7
WCY7054	P	27	7	11	1.3	7.1	7.2
WDB9984	P	35	0	100	0.7	-7.3	7.4
WMLG	P	23	30	39	2.7	2.2	3.5
WSRH	P	43	0	0	1.4	-4.4	4.6
ZCDF8	P	37	0	5	2.0	-4.2	4.7
3FZU5	P	45	27	31	1.2	-0.4	1.3
44038	P	68	32	34	1.8	-2.6	3.1
52082	P	414	69	82	3.4	-1.8	3.9
62114	P	33	0	100	2.3	9.7	10.0

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
C6NL6	SPEED	20	0	15	3.5	5.0	6.1
DIGW	SPEED	43	0	5	3.2	5.4	6.3
ELBU6	SPEED	56	0	63	4.8	7.2	8.7
LACF5	SPEED	33	0	61	4.7	5.7	7.4
LAJV4	SPEED	46	0	13	3.0	6.7	7.3
LALK4	SPEED	32	6	91	5.0	13.4	14.3
OZQS2	SPEED	29	0	100	2.7	5.1	5.8
PGDW	SPEED	35	0	100	1.8	-5.2	5.5
P3BP9	SPEED	24	13	100	7.0	8.2	10.7
SCKB	SPEED	32	3	9	3.4	5.1	6.1
SGAK	SPEED	20	5	25	6.9	7.9	10.4
SKOZ	SPEED	28	0	4	3.2	5.2	6.1
S6JP	SPEED	33	0	18	2.8	6.1	6.8
UCOO	SPEED	25	0	100	2.5	5.8	6.3
VEP717	SPEED	223	0	6	4.2	5.6	7.0
WFGV	SPEED	27	0	48	6.2	10.2	11.9
3FDN9	SPEED	56	11	29	6.5	5.4	8.4
4XGU	SPEED	41	0	10	2.9	6.9	7.4
62159	SPEED	28	0	100	3.5	6.0	7.0

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
ELZT3	DIRN.	72	14	0	33.6	40.1	52.3
LAIP5	DIRN.	25	0	0	43.8	-30.1	53.1
MZHC8	DIRN.	21	0	0	80.4	-1.5	80.4

UGGA	DIRN.	26	15	0	100.7	-0.3	100.7
V2GR	DIRN.	26	0	0	55.7	-39.3	68.2
42047	DIRN.	422	0	0	17.6	32.1	36.6
52083	DIRN.	321	0	0	83.4	-29.0	88.3

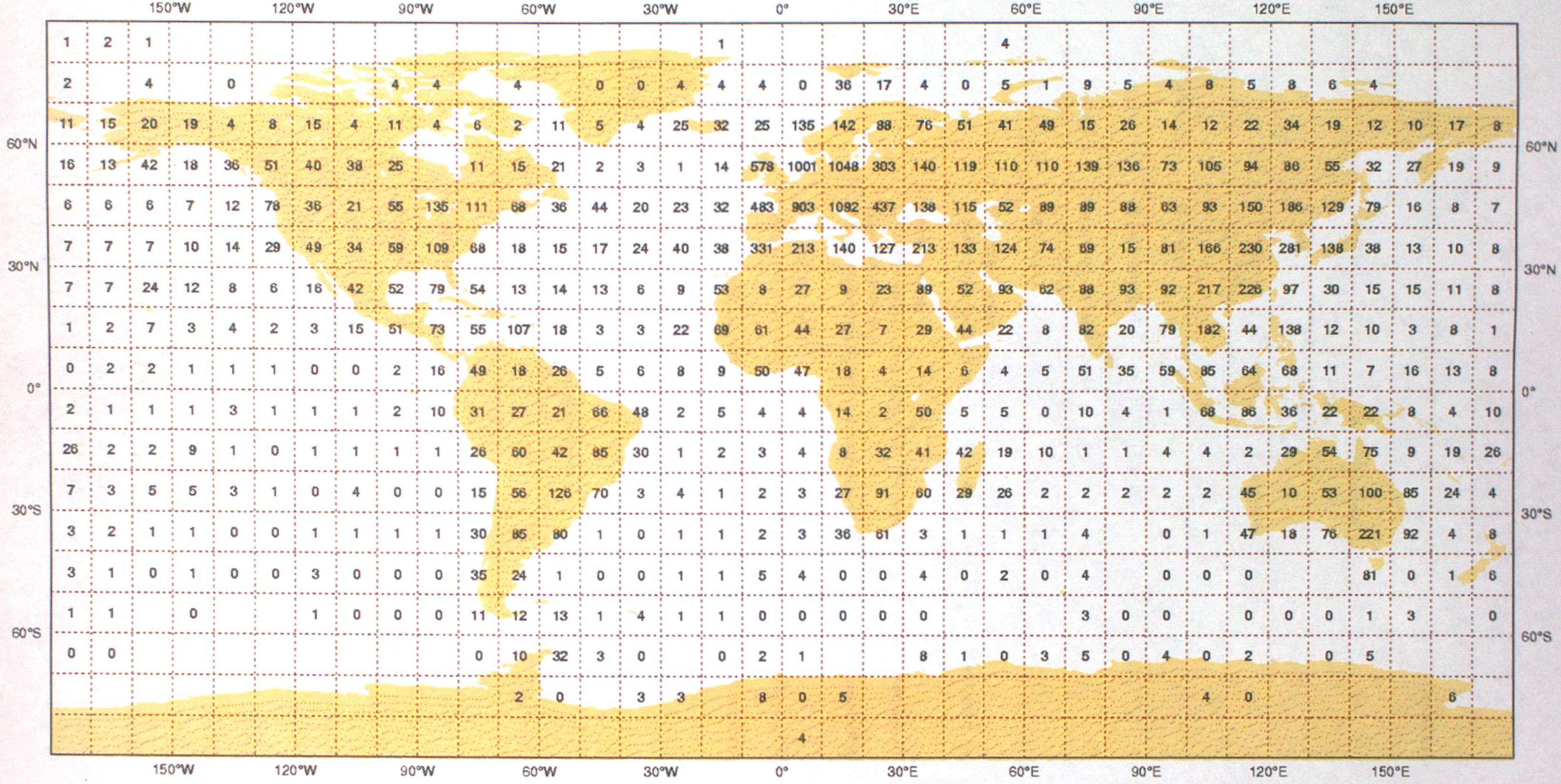
IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
NBTM	T	50	8	100	3.8	7.4	8.3
SP33	T	118	2	100	3.5	-4.9	6.0
TEST	T	30	100	100			
UCJJ	T	106	0	100	3.6	-4.1	5.5
WDB6493	T	39	5	100	4.6	5.2	6.9
WWU8	T	25	36	100	3.2	8.9	9.5
46081	T	713	10	100	3.7	7.0	7.9
46131	T	710	0	100	3.4	4.2	5.4
46146	T	711	0	100	3.0	4.4	5.4
46185	T	711	0	100	3.5	4.9	6.0

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CJ9	RH	23	0	100	8.2	16.8	18.7
DBKV	RH	440	0	100	19.2	-22.2	29.3
DPSD	RH	28	0	100	7.4	16.3	17.9
ELOV9	RH	56	0	100	6.0	15.6	16.7
ELUX2	RH	48	0	100	13.0	21.7	25.3
FNAT	RH	70	0	100	8.1	22.6	24.0
HPEU	RH	57	0	100	8.4	22.3	23.9
JSVY	RH	94	0	100	11.7	-19.7	22.9
LAIP5	RH	36	0	100	10.0	15.8	18.7
OUEW	RH	63	0	100	22.2	-29.6	37.0
SCKM	RH	20	0	100	28.8	-3.6	29.0
UCPE	RH	50	0	100	8.7	-57.0	57.6
VTKZ	RH	21	0	100	6.4	18.5	19.6
ZCBP5	RH	32	0	100	8.9	15.3	17.7
ZSWAV1	RH	35	0	100	18.1	-30.0	35.0
3EBX6	RH	25	0	100	16.0	-36.4	39.8
46088	RH	456	0	100	15.1	-15.9	21.9
62402	RH	44	0	100	10.1	-17.6	20.3

IDENTIFIER	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
A8CK2	SST	20	0	100	0.8	-3.6	3.7
CGDR	SST	187	0	99	1.4	5.9	6.1
C6IZ7	SST	27	0	100	1.2	3.6	3.8
C6KJ5	SST	59	0	56	1.8	3.7	4.1
C6QF4	SST	35	0	94	1.2	3.0	3.2
C6RJ6	SST	60	2	50	1.0	-3.3	3.4
ELOT3	SST	35	26	26	1.5	-0.1	1.5
ELSM9	SST	26	0	62	1.1	-4.5	4.6
ELWU4	SST	45	2	44	1.9	3.8	4.2
HZZD	SST	27	11	100	2.3	-4.1	4.8
H9TO	SST	60	0	100	0.6	3.1	3.2
KGJD	SST	536	7	51	3.0	-3.0	4.2
KHRC	SST	39	0	103	1.1	-3.2	3.3
KHRP	SST	46	0	100	1.8	3.2	3.7
KS035	SST	21	38	100	1.9	6.9	7.1
PHSG	SST	25	4	100	2.8	-4.4	5.2
TEST	SST	51	100	112			
UCKA	SST	24	46	50	1.5	2.2	2.6
V2AC6	SST	27	0	100	1.6	3.4	3.8
WAAH	SST	37	0	100	0.8	3.1	3.2

WCZ5528	SST	71	3	100	2.3	-3.1	3.9
WDCJ	SST	39	3	49	3.8	3.3	5.0
WGJF	SST	58	3	100	2.4	-5.2	5.7
ZCBE7	SST	23	0	17	1.1	3.5	3.7
3EMQ9	SST	63	0	102	1.3	-3.2	3.5
3ERW2	SST	29	0	72	2.3	6.1	6.5
3FPA6	SST	68	0	100	0.7	5.5	5.6
41008	SST	597	0	63	1.3	-3.8	4.0
42007	SST	242	0	90	0.6	-3.7	3.8
42013	SST	634	0	72	0.8	-3.6	3.7
42021	SST	658	0	100	0.8	-5.1	5.2
44011	SST	346	0	100	0.3	-3.6	3.7
44014	SST	690	0	81	0.5	-3.0	3.0
44137	SST	689	0	70	1.2	3.8	4.0
44141	SST	682	0	100	0.5	-4.1	4.2
9HCH7	SST	48	0	102	1.3	3.5	3.7

Figure 1. SHIP/SYNOP mean daily count. JANUARY 2005
All hours
Global average number of observations in 24 hours = 20427



1	2	1														1							4												
2		4		0				4	4		4		0	0	4	4	4	0	36	17	4	0	5	1	9	5	4	8	5	8	6	4			
11	15	20	19	4	8	15	4	11	4	6	2	11	5	4	25	32	25	135	142	88	76	51	41	49	15	26	14	12	22	34	19	12	10	17	8
16	13	42	18	36	51	40	38	25		11	15	21	2	3	1	14	578	1001	1048	303	140	119	110	110	139	136	73	105	94	86	55	32	27	19	9
6	6	6	7	12	78	36	21	55	135	111	68	36	44	20	23	32	483	903	1092	437	138	115	52	89	89	88	63	93	150	186	129	79	16	8	7
7	7	7	10	14	29	49	34	59	109	68	18	15	17	24	40	38	331	213	140	127	213	133	124	74	69	15	81	166	230	281	138	38	13	10	8
7	7	24	12	8	6	16	42	52	79	54	13	14	13	6	9	53	8	27	9	23	89	52	93	62	88	93	92	217	226	97	30	15	15	11	8
1	2	7	3	4	2	3	15	51	73	55	107	18	3	3	22	69	61	44	27	7	29	44	22	8	82	20	79	182	44	138	12	10	3	8	1
0	2	2	1	1	1	0	0	2	16	49	18	26	5	6	8	9	50	47	18	4	14	6	4	5	51	35	59	85	64	68	11	7	16	13	8
2	1	1	1	3	1	1	1	2	10	31	27	21	66	48	2	5	4	4	14	2	50	5	5	0	10	4	1	68	86	36	22	22	8	4	10
26	2	2	9	1	0	1	1	1	1	26	60	42	85	30	1	2	3	4	8	32	41	42	19	10	1	1	4	4	2	29	54	75	9	19	26
7	3	5	5	3	1	0	4	0	0	15	56	126	70	3	4	1	2	3	27	91	60	29	26	2	2	2	2	2	45	10	53	100	85	24	4
3	2	1	1	0	0	1	1	1	1	30	85	80	1	0	1	1	2	3	36	61	3	1	1	1	4		0	1	47	18	76	221	92	4	8
3	1	0	1	0	0	3	0	0	0	35	24	1	0	0	1	1	5	4	0	0	4	0	2	0	4		0	0	0			81	0	1	6
1	1		0			1	0	0	0	11	12	13	1	4	1	1	0	0	0	0	0				3	0	0		0	0	0	1	3		0
0	0									0	10	32	3	0		0	2	1			8	1	0	3	5	0	4	0	2		0	5			
											2	0		3	3		8	0	5									4	0					6	
																		4																	

TABLE 2

MONITORING OF MARINE SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - DRIFTING BUOYS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for drifting buoys.

Standard of comparison :Background field from UKMO global model.

Position :Average latitude and longitude for period.

Observation times : All hours

Elements monitored
:Mean sea level pressure (hPa).
:Wind speed (m s^{-1}).
:Wind direction (degrees).
:Sea surface temperature (degrees).

Parameters monitored

:NOBS :Number of observations received excluding duplicates.

:PGE :Percentage of observations with gross errors.

:%REJ : Percentage of observations flagged excluding those with gross errors

:SD :SD of difference of observations from background values excluding those with gross errors.

:BIAS :Mean difference of observations from background values excluding those with gross errors.
N.B. a positive bias indicates the wind observation is veered to the background.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT
:15 hPa (pressure)
:25 m s^{-1} (vector wind)
:10 degrees (sea surface temperature)

SELECTION CRITERIA : NOBS ≥ 20 , and one or more of the following:

1.|bias|
≥ 4 hPa (pressure),
≥ 5 m s^{-1} (wind speed),
≥ 30 degrees (direction).
≥ 3 degrees (sea surface temperature).

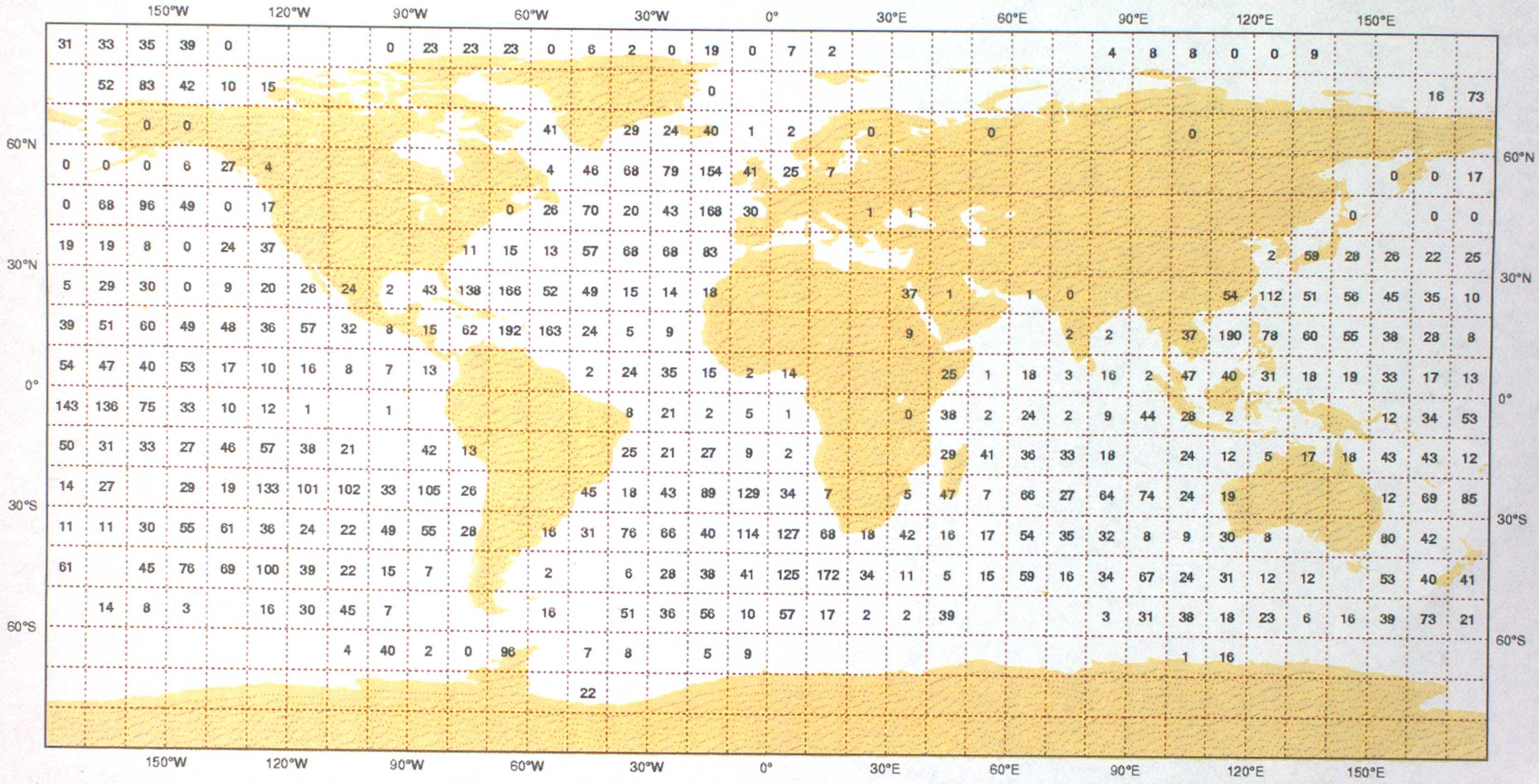
2.SD
≥ 6 hPa (pressure),
≥ 80 degrees (direction).
≥ 5 degrees (sea surface temperature).

3.PGE ≥ 25.

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 m s^{-1}

```
IDENTIFIER   LAT.   LONG.   ELEM    NOBS   PGE  %REJ    SD    BIAS    RMS

12505        24.1    36.2     P      101    87   100   2.0    12.2   12.4
25572        86.0   -41.6     P      227    36   100   8.4    -2.8    8.8
25573        80.9   136.9     P       28    36    96   8.1    -5.5    9.8
33577       -35.0   -26.0     P      488   100   100
41921        27.6   -74.5     P      244     0   100   2.1     4.2    4.7

41922        21.6   -71.4     P      175    10    61   5.7     5.2    7.8
48619        79.2  -159.5     P      133   100   100
52694        20.1   126.5     P      488    10    68   5.2    -6.6    8.4
53524        -9.6    80.4     P      233   100   100

IDENTIFIER   LAT.   LONG.   ELEM    NOBS   PGE  %REJ    SD    BIAS    RMS

41921        27.6   -74.5   SPEED    221     1   100   3.1    -6.1    6.8
41922        21.6   -71.4   SPEED    203    90   100   8.6    20.4   22.2
41925        22.5   -73.1   SPEED    223     2   100   3.5    -6.3    7.2
62565        53.5   -10.6   SPEED    313     0   100   2.3     5.2    5.7

IDENTIFIER   LAT.   LONG.   ELEM    NOBS   PGE  %REJ    SD    BIAS    RMS

56506       -14.7   120.1   DIRN.    145     0     0  32.1   *****  125.4

IDENTIFIER   LAT.   LONG.   ELEM    NOBS   PGE  %REJ    SD    BIAS    RMS

21699        36.5   147.7    SST     285     0    93   1.7    -3.1    3.5
22584        21.7   119.0    SST      40   100   100
32693        15.8  -166.7    SST     737     0   100   0.3     3.1    3.1
44722        43.2   -46.2    SST     678     0   100   1.9     3.1    3.7
46972        16.6   143.9    SST     203     0   100   0.3     4.1    4.1
```

Figure 2. DRIFTER mean daily count. JANUARY 2005
All hours
Global average number of observations in 24 hours = 11810



31	33	35	39	0				0	23	23	23	0	6	2	0	19	0	7	2							4	8	8	0	0	9				
	52	83	42	10	15											0																		16	73
		0	0									41		29	24	40	1	2		0			0					0							
0	0	0	6	27	4							4	46	68	79	154	41	25	7														0	0	17
0	68	96	49	0	17						0	26	70	20	43	168	30			1	1											0		0	0
19	19	8	0	24	37					11	15	13	57	68	68	83														2	59	28	26	22	25
5	29	30	0	9	20	26	24	2	43	138	166	52	49	15	14	18					37	1		1	0				54	112	51	56	45	35	10
39	51	60	49	48	36	57	32	8	15	62	192	163	24	5	9						9				2	2		37	190	78	60	55	38	28	8
54	47	40	53	17	10	16	8	7	13				2	24	35	15	2	14				25	1	18	3	16	2	47	40	31	18	19	33	17	13
143	136	75	33	10	12	1		1						8	21	2	5	1			0	38	2	24	2	9	44	28	2				12	34	53
50	31	33	27	46	57	38	21		42	13				25	21	27	9	2				29	41	36	33	18		24	12	5	17	18	43	43	12
14	27		29	19	133	101	102	33	105	26			45	18	43	89	129	34	7		5	47	7	66	27	64	74	24	19				12	69	85
11	11	30	55	61	36	24	22	49	55	28		16	31	76	66	40	114	127	68	18	42	16	17	54	35	32	8	9	30	8			80	42	
61		45	76	69	100	39	22	15	7			2		6	28	38	41	125	172	34	11	5	15	59	16	34	67	24	31	12	12		53	40	41
	14	8	3		16	30	45	7				16		51	36	56	10	57	17	2	2	39				3	31	38	18	23	6	16	39	73	21
							4	40	2	0	96		7	8		5	9											1	16						
													22																						

TABLE 3

MONITORING OF LAND SURFACE OBSERVATIONS
MONTHLY SUSPECT LIST - SYNOPS & AUTOSYNOPS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for synops & autosynops.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00, 06, 12, 18 UTC
Elements monitored		:Surface pressure (hPa).
Parameters monitored	:HT(m)	:Station height (in metres) as given in WMO No. 9 Vol A
	:RP	:Pressure reporting practice M=mean sea level pressure (hPa) reported. S=Station level pressure reported. 8=Geopotential height (m) of 850 hPa surface reported. 7=Geopotential height (m) of 700 hPa surface reported.
	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:%REJ	:Percentage of observations flagged excluding those with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors.

GROSS ERROR LIMIT :15 hPa (pressure)

SELECTION CRITERIA :NOBS ≥ 20 ,and one or more of the following:

1.|bias| ≥ 4 hPa
2. SD ≥ 6 hPa
3.PGE ≥ 25.

N.B. For stn ht ≥ 500m, mslp is that calculated from station level pressure where available.
For stn ht < 500m, mslp is that as reported by the station where available.

SUSPECT SYNOPS (PRESSURE) BY WMO REGION JAN 2005

WMO REGION 1:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
60320	35.9N	5.4W	2	MS	58	0	0	0	1.2	-9.8	9.9
61816	10.9N	14.3W	69	MS	22	8	36	0	0.6	-1.8	1.9
62056	32.8N	21.9E	625	S8	75	1	1	1	1.1	-5.3	5.4
63801	4.9S	29.6E	882	S8	52	0	0	0	1.2	8.3	8.4
63881	8.0S	31.6E	1923	S	48	1	2	0	0.9	12.9	12.9
65355	9.8N	1.1E	342	MS	93	4	4	0	0.7	-12.7	12.7
67231	14.8S	36.5E	606	S8	28	2	7	14	1.0	4.1	4.2
68014	19.6S	18.1E	1411	S8	81	0	0	0	1.0	-6.8	6.9
68030	18.5S	25.6E	1071	8	82	1	1	0	4.7	9.1	10.2
68102	19.9S	16.4E	1343	S8	71	0	0	0	0.9	6.0	6.1
68291	24.3S	31.1E	524	S8	99	19	19	64	2.3	10.1	10.4
68312	26.5S	18.1E	1067	S8	88	0	0	0	0.7	4.6	4.7
68325	25.4S	25.4E	1275	8	37	0	0	3	1.2	4.2	4.4
68396	26.5S	31.3E	641	S8	55	1	2	5	1.1	5.0	5.1
68575	30.0S	30.0E	1175	S8	118	118	100	0			

WMO REGION 2:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
23032	69.7N	66.8E	25	MS	119	0	0	25	1.1	-4.8	4.9
24329	66.3N	114.3E	236	MS	96	1	1	9	1.9	4.0	4.4
24671	63.9N	135.9E	402	MS	117	3	3	9	2.1	4.1	4.6
30554	54.5N	113.6E	995	MS	120	1	1	0	0.7	12.2	12.2
31123	57.8N	130.9E	255	MS	118	0	0	11	1.8	4.4	4.8
35416	49.1N	54.7E	128	S	120	0	0	0	0.6	4.6	4.6
36982	41.9N	78.2E	3635	S7	118	0	0	0	0.8	5.2	5.3
38565	40.6N	65.7E	485	MS	120	119	99	0	0.0	3.9	3.9
38846	38.4N	70.0E	1437	S8	30	0	0	3	1.4	-6.2	6.4
40435	27.0N	44.1E	991	MS	60	1	2	0	1.4	7.4	7.5
40700	39.6N	47.9E	45	MS	117	0	0	0	0.7	-6.0	6.0
40713	37.4N	46.3E	1475	MS	117	64	55	0	0.7	13.7	13.7
40726	36.8N	45.7E	1384	MS	108	1	1	3	1.4	4.4	4.6
40741	36.5N	61.2E	235	MS	116	0	0	0	0.9	-5.0	5.1
40743	36.2N	57.7E	978	MS	118	0	0	0	0.6	4.9	4.9
40757	35.6N	53.4E	1171	MS	116	0	0	2	1.2	5.6	5.7
40780	33.6N	46.4E	1362	MS	115	0	0	0	0.7	4.5	4.6
40854	29.1N	58.4E	1067	MS	112	0	0	0	1.4	10.8	10.9
41254	23.1N	57.6E	1755	S8	120	120	100	0			
44212	50.0N	92.1E	940	MS	120	1	1	54	2.5	5.4	6.0
44416	28.6N	81.6E	720	MS	72	1	1	0	1.0	4.5	4.6
47022	40.8N	128.2E	1224	S	110	0	0	3	1.0	5.0	5.1
47155	35.2N	128.6E	5	MS	119	0	0	91	0.9	-4.2	4.3
47678	33.1N	139.8E	79	MS	120	0	0	0	0.8	-9.1	9.1
48924	21.1N	101.5E	644	S	47	1	2	4	0.9	11.0	11.0
48925	20.7N	102.0E	550	S	53	1	2	4	0.9	-10.3	10.3
48938	19.2N	101.7E	326	MS	48	22	46	0	0.4	14.4	14.4
48952	15.7N	106.4E	168	MS	42	0	0	0	0.9	-4.4	4.5
50727	47.2N	119.9E	1028	MS	120	0	0	0	0.9	4.8	4.9
50978	45.3N	130.9E	234	MS	120	0	0	0	0.7	-6.0	6.0
51243	45.6N	84.9E	428	MS	120	0	0	0	2.3	-6.6	7.0
51288	45.4N	90.5E	1651	S	120	0	0	0	1.3	-7.0	7.1
51334	44.6N	82.9E	321	M	118	0	0	11	2.3	7.5	7.8
51379	44.0N	89.6E	794	M	117	0	0	11	2.9	7.7	8.2

51818	37.6N	78.3E	1376	M	118	0	0	34	1.9	4.3	4.7
52378	41.4N	102.4E	960	M	118	0	0	54	2.1	4.9	5.3
52866	36.6N	101.8E	2262	S	116	0	0	0	1.3	-4.4	4.6
53083	44.6N	114.2E	1183	M	117	1	1	0	3.1	7.4	8.0
53352	41.7N	110.4E	1377	M	118	0	0	0	2.9	6.2	6.8
53480	41.0N	113.1E	1416	M	118	0	0	35	2.9	6.0	6.7
53487	40.1N	113.3E	1069	M	117	0	0	44	2.6	5.6	6.2
53502	39.8N	105.8E	1143	M	117	0	0	87	2.3	6.4	6.8
53593	39.8N	114.6E	910	M	116	1	1	48	2.5	6.3	6.8
53646	38.3N	109.8E	1058	MS	120	9	8	0	0.7	-13.7	13.7
53673	38.8N	112.7E	838	M	117	0	0	2	2.5	4.6	5.2
53705	37.5N	105.7E	1185	M	118	0	0	61	2.1	4.9	5.3
53764	37.5N	111.1E	951	M	118	0	0	6	2.6	4.2	4.9
53787	37.1N	113.0E	1042	M	117	0	0	0	2.4	4.7	5.3
53863	37.0N	111.9E	750	M	117	0	0	4	2.1	4.9	5.3
54308	41.2N	116.6E	661	M	118	0	0	0	2.6	4.1	4.9
54311	41.9N	117.8E	844	M	117	0	0	9	2.7	4.4	5.2
54386	41.4N	128.2E	1018	M	118	0	0	34	2.9	6.0	6.7
56193	32.4N	104.5E	877	M	120	0	0	0	3.6	6.2	7.2
56287	30.0N	103.0E	629	M	120	0	0	16	2.6	6.5	7.0
56385	29.5N	103.3E	3049	S	119	0	0	43	3.0	-7.2	7.8
56462	29.0N	101.5E	2994	S	120	0	0	0	1.6	8.7	8.8
56768	25.0N	101.5E	1773	S	120	0	0	0	0.8	-5.5	5.6
57014	34.6N	105.9E	1086	M	118	1	1	0	3.1	5.1	6.0
57816	26.6N	106.7E	1074	S	120	110	92	0	0.4	-14.4	14.4
57832	27.0N	108.7E	611	MS	119	0	0	2	1.8	4.2	4.6
57922	25.8N	107.6E	971	M	120	0	0	4	2.6	4.7	5.4
57932	26.0N	108.5E	287	M	120	0	0	0	1.3	4.2	4.4
58437	30.1N	118.2E	1836	S	120	0	0	73	2.0	-4.8	5.2
59007	24.1N	105.1E	1251	M	120	0	0	15	3.0	4.8	5.7
59663	21.8N	112.0E	22	MS	120	0	0	0	0.7	-8.5	8.5

WMO REGION 3:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
80099	7.1N	70.7W	122	MS	37	0	0	0	1.2	-5.2	5.3
80342	1.4N	77.3W	1802	S	47	29	62	0	0.7	-13.7	13.7
80434	9.2N	66.0W	125	MS	20	1	5	5	1.5	-5.2	5.4
82181	2.0S	54.1W	146	MS	82	0	0	0	1.1	6.0	6.1
82704	7.6S	72.7W	170	MS	70	0	0	0	1.2	-4.7	4.9
83235	12.4S	46.4W	604	MS	86	0	0	0	0.8	6.1	6.2
83332	14.1S	46.4W	826	MS	85	9	11	0	0.8	13.5	13.5
83470	17.9S	50.9W	727	MS	84	1	1	1	1.1	-5.4	5.5
83531	18.6S	46.5W	940	MS	75	0	0	0	0.7	-6.1	6.1
83836	25.5S	50.6W	837	MS	89	1	1	0	0.6	-4.2	4.2
84425	5.9S	76.1W	179	MS	22	0	0	0	1.1	4.9	5.0
84452	6.8S	79.8W	29	MS	93	0	0	0	0.8	4.2	4.3
84455	6.5S	76.4W	281	MS	77	1	1	1	1.3	7.0	7.1
84472	7.1S	78.5W	2620	S	51	0	0	0	0.7	-5.4	5.4
84474	7.2S	76.7W	350	S	20	0	0	0	1.0	9.2	9.3
84686	13.6S	72.0W	3248	S	104	0	0	0	0.7	-4.1	4.2
84688	13.7S	73.4W	3444	S	44	0	0	0	0.6	-12.1	12.1
85140	14.3S	67.4W	140	MS	58	0	0	0	1.3	7.5	7.6
85264	18.5S	64.1W	1998	S	52	52	100	0			
85312	19.8S	63.9W	992	S	44	1	2	5	1.0	-11.8	11.8
85432	22.5S	68.9W	2320	S8	83	0	0	0	0.5	4.5	4.5

WMO REGION 4:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
71021	61.3N	124.5W	283	MS	118	0	0	35	2.0	5.6	5.9
71060	52.5N	116.1W	230	MS	120	120	100	0			
71094	66.6N	61.6W	393	MS	120	0	0	3	1.3	-5.0	5.2
71176	60.0N	64.2W	551	MS	118	0	0	42	2.1	-4.7	5.1
71177	57.1N	61.5W	834	S	120	1	1	38	2.2	-5.7	6.1
71179	54.7N	58.4W	683	S	120	0	0	59	2.0	-5.2	5.6
71181	47.1N	55.3W	29	MS	120	0	0	0	1.1	-6.2	6.3
71222	58.4N	130.0W	816	MS	120	0	0	0	1.2	4.1	4.3
71581	54.5N	128.6W	215	MS	120	55	46	0	7.1	-4.3	8.3
71891	50.2N	121.6W	229	MS	120	0	0	14	3.4	4.2	5.4
72327	36.1N	86.7W	182	MS	118	0	0	0	0.7	4.1	4.2
76055	31.0N	114.9W	440	MS	35	35	100	0			
76225	28.6N	106.1W	1435	MS	54	1	2	0	0.8	-4.5	4.6
76543	22.0N	98.8W	104	M	80	0	0	1	2.3	8.9	9.2
76658	19.2N	103.7W	494	MS	41	0	0	2	1.5	5.4	5.6
76762	17.5N	99.5W	1265	MS	63	0	0	0	0.9	5.9	6.0
76773	17.8N	97.8W	1650	MS	24	0	0	4	1.2	6.1	6.2
76843	16.8N	93.1W	528	MS	98	0	0	0	0.9	-4.4	4.5
78588	17.2N	87.5W	-306	M	112	112	100	0			
78655	14.0N	89.6W	660	MS	80	0	0	0	1.0	4.0	4.1

WMO REGION 5:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
94130	14.8S	131.9E	120	MS	120	0	0	0	1.0	5.2	5.3
96505	3.7N	115.7E	-9999	8	29	28	97	0	0.0	2.7	2.7
97378	10.7S	123.1E	1	MS	46	44	96	0	0.0	-14.9	14.9
98233	17.6N	121.7E	61	M	90	0	0	48	1.1	-4.7	4.8

WMO REGION 6:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
01360	61.9N	7.9E	711	MS	109	0	0	1	1.3	6.3	6.4
06239	54.9N	44.7E	49	MS	357	93	26	0	7.5	0.3	7.5
06605	47.1N	7.1E	1599	S8	120	0	0	0	1.0	-5.2	5.3
06685	47.0N	9.1E	515	MS	120	0	0	2	1.4	7.5	7.6
08912	42.9N	0.8W	1434	MS	32	32	100	0			
08922	42.8N	0.2W	1660	MS	34	34	100	0			
10850	48.8N	10.7E	457	MS	359	0	0	0	0.5	-6.0	6.0
11116	47.5N	10.8E	870	MS	62	0	0	0	0.9	4.9	5.0
12510	50.7N	15.7E	1603	S8	120	0	0	50	2.3	-4.0	4.6
13269	44.3N	19.9E	176	MS	115	0	0	0	0.9	8.0	8.1
13369	43.3N	20.0E	1038	8	108	0	0	13	1.3	-4.1	4.3
14554	44.9N	18.4E	136	S	61	8	13	3	1.0	-13.4	13.4
16450	37.6N	14.3E	940	S8	119	0	0	0	0.8	-4.2	4.3
16538	40.1N	9.3E	1022	S	39	0	0	0	1.1	9.0	9.1
17203	38.9N	40.5E	1177	S8	118	1	1	0	1.2	4.9	5.0
17521	35.2N	33.5E	285	MS	91	91	100	0			
40030	35.1N	36.8E	301	M	77	0	0	0	1.6	-4.4	4.7

ANTARCTIC:

STATION	LAT	LONG	HT(M)	RP	NOBS	NGE	PGE	%REJ	SD	BIAS	RMS
89004	71.7S	2.8W	815	MS	104	0	0	0	1.5	-5.5	5.7
89257	75.4S	59.9W	40	S	627	0	0	0	1.5	-5.7	5.9

89263	66.0S	66.1W	20	M	185	0	0	0	0.9	12.6	12.6
89266	72.2S	60.2W	91	S	277	277	100	0			
89272	75.0S	70.8W	1395	S	263	263	100	0			
89327	73.2S	127.1W	230	S	258	86	33	0	4.7	1.3	4.9
89610	65.9S	113.1E	90	S	253	0	0	0	0.9	-9.2	9.2
89614	66.7S	111.5E	500	S	259	259	100	0			
89744	74.0S	43.1E	3353	S	270	0	0	0	0.5	6.4	6.4
89811	66.7S	112.8E	1366	S	256	0	0	0	1.1	-4.6	4.7

TABLE 4A

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored

:N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAH	3925	0	41	1.8	0.0	3902	0	41	0	8.0	0.1
AAL	6048	0	37	1.6	0.0	5684	0	38	0	7.7	0.0
AAR	1148	0	5	2.0	-0.8	1131	0	6	0	7.8	-0.1
ACA	2505	1	13	1.6	0.0	2102	0	15	0	7.9	0.4
ACI	104	0	2	0.8	0.1	104	0	2	0	5.7	1.1
AEA	1496	1	3	1.5	-0.2	1249	0	3	0	6.9	0.2
AEL	50	2	100	1.5	-0.5	50	2	8	0	7.1	0.0
AFL	662	1	3	1.5	0.3	354	1	3	0	7.2	0.8
AFR	1733	1	6	1.4	0.2	1679	0	8	0	7.5	0.3
AJM	424	0	3	1.4	-0.1	376	0	3	0	7.1	0.5
AJX	387	0	5	1.8	0.7	389	1	7	0	7.8	0.3
AMD	177	0	65	1.6	0.7	177	0	65	0	5.2	0.9
AMT	1648	0	39	1.5	0.0	1648	0	40	0	8.0	0.5
AMX	462	1	5	1.8	0.2	418	0	41	0	9.2	-0.5
ANA	58	0	12	1.6	-0.2	58	2	17	0	10.6	0.1
ANZ	6018	0	23	1.2	0.3	6001	0	23	0	6.0	0.4
ARG	29	7	41	2.3	0.1	26	0	38	0	7.2	1.2
ATN	142	0	100	4.0	-2.0	135	1	100	0	11.6	1.2
AUA	93	0	31	4.2	2.6	91	0	4	0	8.7	1.5
AVA	350	1	3	1.6	0.5	349	0	62	0	9.3	0.3
AVN	199	0	41	1.0	0.0	201	0	42	0	8.7	0.1
AXF	81	0	48	1.7	0.2	79	0	47	0	5.6	0.5
AZA	641	0	7	2.2	0.3	545	0	5	0	8.2	0.3
BAL	492	1	7	1.4	0.1	481	0	9	0	8.6	0.5
BAW	676	0	14	1.8	-0.5	444	0	15	0	7.4	0.4
BBR	261	0	3	1.6	0.6	259	0	100	0	14.1	4.4
BHP	74	0	3	1.4	-0.4	69	0	4	0	6.5	0.4
BPA	787	1	100	1.9	0.5	794	0	8	0	7.6	0.0
BSK	56	0	4	2.0	0.0	39	0	23	0	13.4	1.3
BWA	423	0	4	1.5	-0.1	379	0	3	0	6.6	0.3
CAL	49	4	8	1.9	-0.5	50	2	6	0	9.3	1.0
CCA	258	2	19	2.8	-0.1	275	1	100	0	11.9	-0.6
CES	433	2	6	1.8	-0.2	435	1	7	0	9.0	0.4
CFC	31	0	6	1.4	-0.1	31	0	10	0	9.3	1.4
CFG	1094	0	3	1.3	0.2	1008	0	5	0	7.4	0.2
CKK	147	0	10	2.1	0.5	154	0	10	0	8.8	0.3
CKS	361	1	29	1.8	0.3	324	0	30	0	7.9	0.8
CLX	332	0	3	1.4	-0.5	220	1	7	0	8.8	-0.6
CNJ	15270	0	100	1.1	0.4	15270	0	100	0	5.8	0.6
COA	194	4	25	1.4	0.0	176	1	22	0	8.9	1.1
CRL	1041	1	4	1.6	0.5	1010	0	5	0	8.0	0.4
CSA	37	0	5	1.2	0.0	31	0	6	0	6.9	0.1
CSN	85	1	9	1.9	-0.1	86	0	9	0	9.5	-0.6
CUB	250	1	8	2.0	-0.1	237	1	10	0	8.7	0.5
DAL	3443	0	34	1.7	0.2	3142	0	37	0	7.6	0.1
DCS	32	0	6	2.2	-0.8	22	0	5	0	7.3	0.5
DHL	138	1	100	6.5	-6.2	76	0	33	0	14.5	0.3
DLH	709	1	11	1.4	0.1	651	0	13	0	7.1	0.3
DRD	266	2	5	1.8	0.2	266	0	56	0	9.4	-0.4
EDW	87	1	2	1.3	-0.1	80	1	6	0	8.1	2.2
EEZ	203	1	7	1.6	-0.3	204	0	7	0	7.0	1.2
EIA	418	0	15	1.4	0.5	399	0	100	0	18.5	2.5
EIN	44	2	9	2.0	1.1	28	0	4	0	5.6	0.5
ELY	72	0	3	1.7	0.2	52	0	6	0	8.2	0.4
ETH	41	0	5	1.5	0.3	37	0	3	0	6.2	1.1
EVA	204	0	7	1.5	-0.3	218	0	6	0	6.1	-0.4
FCA	161	1	6	1.8	0.4	136	0	5	0	8.6	1.4

FDX	1707	1	46	1.5	0.2	1542	1	47	0	8.0	0.1
FIN	323	0	6	1.5	0.2	251	0	7	0	7.5	0.3

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
FJI	779	2	34	2.5	1.3	769	0	28	0	7.2	0.8
FOM	1009	0	26	1.3	0.2	1007	0	26	0	6.8	0.5
FWI	601	1	4	1.5	-0.2	606	0	4	0	6.7	0.8
GCO	142	1	14	1.3	0.1	143	0	22	0	10.5	0.9
GRL	72	0	1	1.6	0.5	66	0	0	0	5.5	1.3
GTI	251	0	14	2.4	1.1	245	0	16	0	8.6	0.7
HAL	4355	0	36	1.7	0.4	4307	0	37	0	8.1	0.1
HMY	61	0	38	1.0	-0.1	60	0	38	0	8.4	0.2
HXL	477	1	3	1.3	-0.1	433	0	3	0	7.6	0.2
IBE	3861	0	4	1.6	0.3	3839	0	5	0	7.9	0.4
ICE	898	0	6	1.6	-0.1	596	0	5	0	8.2	0.4
IWD	310	1	1	1.3	0.0	304	1	4	0	8.3	-0.2
JAL	2279	0	5	1.7	0.2	2265	0	6	0	8.1	0.3
JAZ	1103	2	4	1.5	0.4	1107	0	5	0	8.2	0.2
JBU	52	0	0	1.1	-0.4	52	0	0	0	4.0	-0.1
KAI	60	0	50	2.4	1.1	56	0	50	0	8.8	2.4
KAL	1565	0	10	1.8	0.0	1571	0	11	0	8.1	-0.2
KIW	21	67	100	9.1	9.1	21	14	62	0	17.1	0.7
KLM	1346	0	3	1.4	0.0	1114	0	5	0	7.5	0.3
LAN	655	0	2	1.5	0.0	654	0	2	0	5.4	0.6
LAP	41	0	54	3.8	2.0	38	0	45	0	9.8	-0.8
LDI	427	1	3	1.7	0.0	371	1	5	0	8.4	0.5
LNE	119	2	5	1.7	0.3	119	0	5	0	9.6	0.2
LOT	205	1	4	1.7	-0.3	132	0	2	0	5.9	-0.5
LTU	1166	1	6	1.6	-0.1	925	1	4	0	7.2	0.5
LXR	42	2	5	1.8	-0.2	40	0	0	0	5.6	0.8
MAS	196	1	12	2.1	0.6	184	0	10	0	6.9	0.2
MMZ	116	0	4	2.1	1.1	117	0	8	0	9.7	-0.4
MON	53	0	4	1.0	-0.2	46	0	11	0	12.2	-0.7
MPD	320	0	3	1.8	0.6	307	0	3	0	6.8	0.5
MPH	729	0	2	1.6	-0.7	606	0	2	0	6.7	-0.2
MXA	49	10	29	3.0	0.3	48	0	100	0	20.7	1.1
MYT	234	1	4	1.7	0.2	182	1	8	0	8.0	0.3
NAO	372	0	31	2.1	0.8	369	1	33	0	8.4	1.1
NCA	814	0	5	1.7	0.2	631	0	6	0	8.1	-0.1
NOS	68	0	0	1.0	-0.2	58	0	3	0	6.3	0.4
NVR	59	0	2	1.3	-0.1	45	2	9	0	11.4	0.3
NWA	7616	1	16	1.8	0.1	7542	0	18	0	9.0	0.2
NZL	3194	0	8	1.0	0.2	3194	0	8	0	4.7	0.1
OAE	621	0	24	1.4	-0.1	524	0	62	0	12.3	2.1
OOM	84	2	11	2.0	-1.4	58	0	7	0	10.0	0.8
PAC	352	1	10	1.7	-0.3	328	1	9	0	7.2	0.1
PAL	1636	1	10	1.6	-0.1	1570	1	12	0	8.9	0.4
PAO	295	1	41	1.5	0.4	294	0	40	0	6.4	0.7
PBI	688	1	34	1.5	-0.1	680	0	34	0	7.0	0.6
PLM	277	0	3	2.0	1.5	231	1	5	0	8.4	-0.6
PUA	28	0	43	1.3	-0.1	27	0	44	0	10.3	5.1
QFA	4086	0	40	1.2	0.4	4067	0	40	0	5.7	0.4
QQA	54	0	46	1.0	-0.1	54	0	46	0	4.9	0.9
RAM	343	1	4	1.6	0.1	257	1	50	0	10.4	1.0
RCH	273	2	100	3.6	-0.7	233	0	100	0	12.5	1.5
RJA	46	0	0	1.3	-0.4	28	0	0	0	5.2	1.9
RYN	139	0	45	1.7	-0.6	139	1	47	0	7.3	0.9

RZO	581	1	5	1.8	-0.5	549	0	5	0	7.8	0.7
SAA	57	0	2	1.3	-0.2	58	0	7	0	12.8	-2.4
SEU	199	1	7	1.7	0.2	187	0	5	0	7.4	1.3
SIA	399	0	4	1.4	0.5	398	0	4	0	5.0	0.2
SLM	157	1	3	1.5	0.5	157	0	2	0	7.2	0.0
SQC	41	0	2	1.0	0.6	43	0	2	0	5.4	0.5

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
SVH	398	0	5	1.1	0.6	398	0	5	0	4.9	0.3
TAG	30	3	40	1.9	0.2	31	0	42	0	8.0	0.3
TAM	37	3	41	2.6	1.5	37	0	46	0	13.7	2.1
TAP	592	1	4	1.4	-0.2	536	0	3	0	7.3	1.0
TCX	24	0	0	0.9	0.2	21	0	0	0	5.0	1.8
THA	283	0	3	1.5	0.3	286	0	4	0	6.8	0.6
THT	1010	0	23	1.0	0.6	1009	0	23	0	5.8	1.0
TPA	61	2	7	1.6	0.3	55	0	7	0	6.8	0.9
TSC	65	2	2	1.2	-0.4	42	0	5	0	10.0	0.0
TSO	44	0	7	1.4	-0.9	45	0	7	0	5.1	-0.2
TUB	158	1	9	1.9	0.7	160	1	13	0	9.8	0.0
UAE	579	0	11	1.3	0.5	578	0	11	0	5.5	0.7
UAL	261796	0	97	1.6	-0.1	261905	0	97	0	5.1	0.6
UPS	1446	0	59	1.9	0.5	1425	0	58	0	8.0	0.5
USA	183	1	3	1.9	0.4	162	0	4	0	9.3	-0.1
VHF	51	0	2	1.2	0.0	51	0	0	0	4.9	0.6
VIR	190	1	3	1.6	-0.2	121	0	1	0	5.4	0.6
VRG	46	7	41	2.7	1.0	47	2	100	0	16.5	1.8
VVJ	41	2	27	1.9	-0.6	43	0	35	0	9.5	0.9
VVR	70	3	33	1.7	-0.3	72	1	32	0	6.9	-0.3
WOA	496	1	11	1.6	0.3	443	0	16	0	9.8	1.4
XLA	185	1	2	1.1	-0.2	178	0	4	0	7.6	0.6
YSS	55	0	4	1.6	-0.2	52	0	4	0	7.8	0.5

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	40945	0	11	1.2	0.7	40944	0	11	0	5.2	0.5
B-	12647	0	76	1.6	0.4	12647	0	76	0	5.0	0.5
EU	202132	0	26	1.2	0.3	202132	0	26	0	4.5	0.4
HK	4418	0	26	1.3	0.4	4418	0	26	0	5.4	0.6
JP	31035	0	53	1.6	0.7	31035	0	52	0	5.1	0.3
LN	33	3	33	1.7	-0.4	30	0	33	0	11.8	3.4
MK	2763	0	5	2.0	1.8	2728	0	5	0	6.8	1.6
SA	4647	0	7	1.2	0.8	4647	0	24	0	5.3	0.0
TN	77	4	32	2.1	-0.1	77	0	31	0	8.4	-0.7

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
N	1243	1	32	2.3	0.2	1162	0	34	0	9.6	0.4
US ACARS	1014305	0	66	1.5	0.3	1014283	0	65	0	5.2	0.6

TABLE 4B

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Statistics for each airline carrier.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:All hours combined.
Level(s) monitored		:1000.0 – 300.1 hPa
Elements monitored		:TEMP in °C ; WIND in m s^{-1}
Parameters monitored		
	:N REP.	:Number of observations received excluding duplicates.
	:PG	:Percentage of observations with gross errors.
	:PR	:Percentage of observations rejected by quality control including rejections from the duplicate check.
	:PC	:Percentage of observations with calm winds.
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors in Temperature & Wind Speed.
GROSS ERROR LIMITS		:10.0 °C ; 60 m s^{-1} Vector Wind
SELECTION CRITERIA		:N REP $\geq$ 20

NB: All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS".

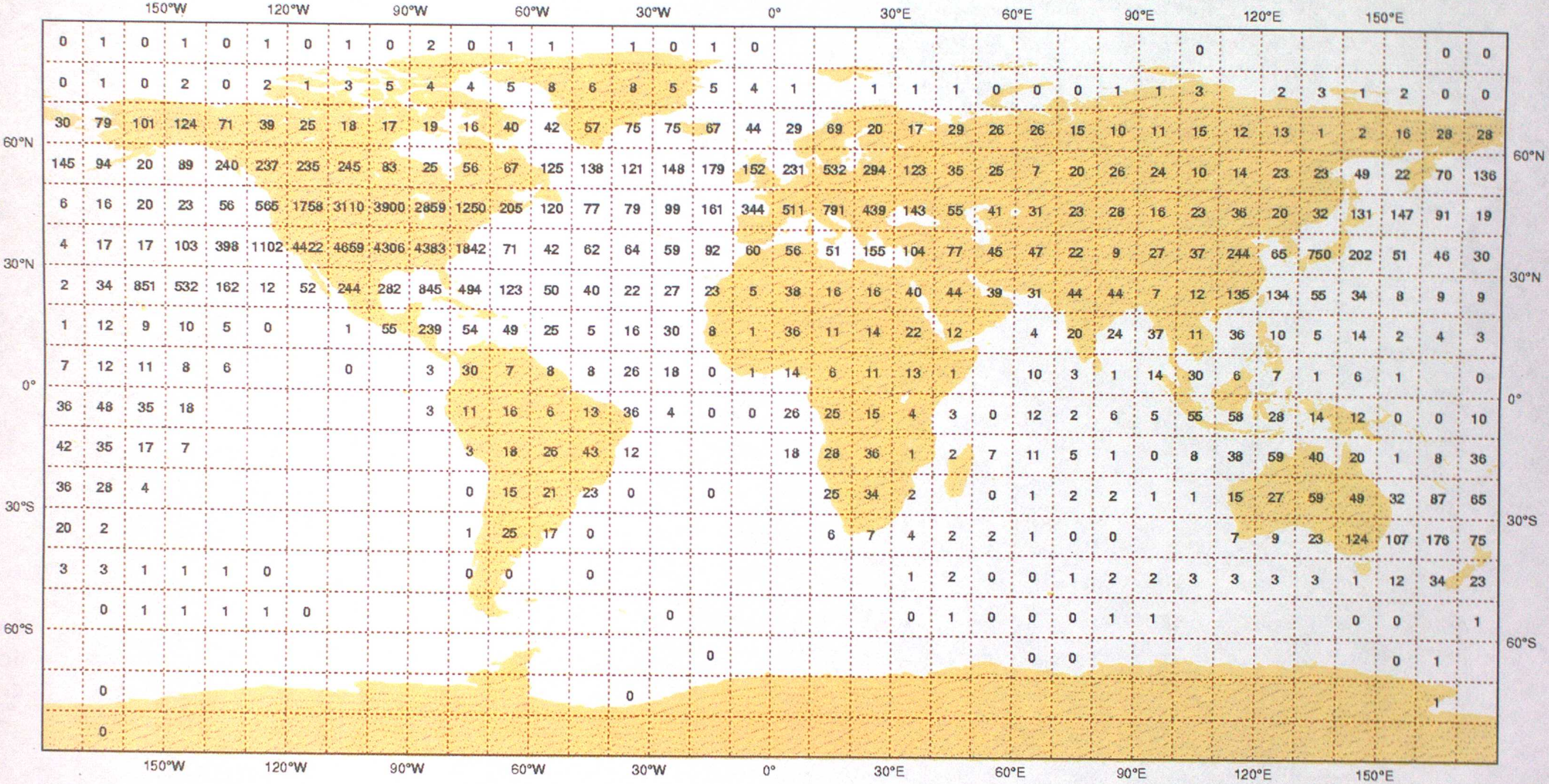
IDENT.	N.REP.	TEMPERATURE				WIND					
		PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	384	1	39	1.5	0.0	362	0	41	0	7.2	1.3
ACA	61	3	16	1.8	0.0	54	0	17	0	6.7	0.3
AFR	93	1	5	1.4	0.2	91	0	7	0	7.4	-0.4
AMD	304	0	61	1.4	0.5	304	0	61	0	4.4	0.3
AMT	72	3	25	1.3	0.2	77	0	23	0	8.2	0.6
ANZ	236	2	17	1.4	-0.1	238	0	16	0	5.5	-0.2
BAF	36	0	11	2.2	0.4	23	4	13	0	10.5	0.7
BAL	30	0	3	1.0	0.0	27	0	7	0	10.4	-0.1
BPA	20	5	100	1.0	0.2	21	0	19	0	15.0	1.1
CFC	39	3	8	0.7	0.5	31	0	6	0	4.7	0.4
CFG	34	0	0	0.9	0.3	29	0	0	0	5.9	1.4
CKS	46	0	11	1.3	-0.4	35	0	11	0	10.8	-1.3
CNJ	152570	0	100	1.7	0.5	152570	0	100	0	5.8	-0.3
CRL	44	2	5	1.2	-0.2	42	0	10	0	10.2	0.4
DAL	181	0	48	1.5	0.4	179	0	49	0	6.9	0.3
DLH	220	0	7	1.2	0.1	217	0	7	0	6.4	0.5
EIA	23	0	9	1.7	-0.1	27	0	100	0	18.9	6.1
EVA	27	4	30	1.4	0.5	26	0	27	0	6.6	0.5
FDX	552	0	30	1.3	0.3	428	0	29	0	7.5	0.8
FIN	98	0	3	1.2	0.2	85	0	5	0	8.1	-0.4
FOM	25	0	44	0.7	-0.2	25	0	44	0	5.5	2.2
GCO	92	0	14	1.5	0.0	92	0	32	0	14.2	2.6
GTI	40	0	5	1.8	0.6	37	0	5	0	7.2	0.2
HAL	538	0	41	1.7	0.0	537	0	41	0	8.1	1.7
IBE	25	4	8	1.3	0.5	26	0	12	0	11.0	1.1
ICE	31	0	6	2.5	-0.9	26	0	0	0	6.1	-0.1
JAL	141	3	11	1.6	0.5	141	0	10	0	6.8	0.4
JAZ	101	1	19	2.4	0.4	100	0	17	0	6.9	0.2
KAL	32	0	3	1.4	-0.2	34	0	3	0	6.1	-0.2
KLM	46	0	2	1.1	0.3	41	0	0	0	4.9	0.1
LAN	51	0	2	1.2	0.2	47	0	0	0	4.4	0.6
MPH	39	0	0	1.2	-0.2	29	0	7	0	11.5	1.9
NCA	63	0	3	1.5	-0.1	58	0	2	0	7.4	0.7
NWA	616	1	21	1.8	0.2	612	0	22	0	9.5	0.4
NZL	18246	0	53	1.3	0.3	18245	0	53	0	4.6	0.1
OAE	42	0	5	1.2	0.2	29	3	52	0	21.2	5.9
PAC	28	4	11	1.4	-0.4	25	0	12	0	10.9	-1.4
PAL	50	0	28	1.4	-0.5	50	0	28	0	10.7	0.6
QFA	274	0	36	1.3	0.1	272	0	35	0	5.1	0.6
RCH	47	0	100	3.4	-0.7	37	0	100	0	15.0	0.9
RRR	44	16	23	2.3	0.9	45	0	22	0	14.7	1.2
SIA	59	0	3	1.3	0.4	61	0	2	0	4.3	0.1
SKI	268	2	39	3.0	0.0	351	1	49	0	18.2	-0.4
SVH	22494	0	60	1.5	0.8	22494	0	59	0	4.3	0.4
THT	35	0	60	1.4	-0.6	35	0	60	0	8.9	2.4
UAE	113	0	2	1.1	0.5	114	0	3	0	4.5	0.4
UAL	228631	0	99	1.3	-0.1	228345	0	98	0	4.3	0.4
UPS	298	1	49	1.3	0.1	293	0	50	0	6.4	0.9
VVR	48	0	25	3.0	-1.6	52	0	13	0	9.7	1.8
WOA	158	1	6	1.6	0.9	120	1	28	0	13.6	1.7

IDENT.	N.REP.	TEMPERATURE				WIND					
		PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AU	34717	0	53	1.4	0.4	34719	0	53	0	4.4	0.2
B-	60348	0	74	1.4	0.5	60348	0	74	0	4.2	0.2
EU	592441	0	69	1.0	0.2	588914	0	68	0	4.0	0.0
HK	4856	0	77	1.5	0.8	4856	0	77	0	4.7	0.3

JP	58447	0	56	1.3	0.5	58447	0	55	0	4.6	0.6

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
MK	3091	0	50	1.5	0.9	3048	0	50	0	4.2	0.4
SA	4599	0	58	1.5	0.3	4599	0	67	0	4.7	-0.1
US ACARS	1504180	0	78	1.3	0.3	1500297	0	79	0	4.3	0.3

Figure 3a. AIRCRAFT 300 - 150 hPa mean daily count. JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 54243



0	1	0	1	0	1	0	1	0	2	0	1	1		1	0	1	0											0						0	0
0	1	0	2	0	2	1	3	5	4	4	5	8	6	8	5	5	4	1		1	1	1	0	0	0	1	1	3		2	3	1	2	0	0
30	79	101	124	71	39	25	18	17	19	16	40	42	57	75	75	67	44	29	69	20	17	29	26	26	15	10	11	15	12	13	1	2	16	28	28
145	94	20	89	240	237	235	245	83	25	56	67	125	138	121	148	179	152	231	532	294	123	35	25	7	20	26	24	10	14	23	23	49	22	70	136
6	16	20	23	56	565	1758	3110	3900	2859	1250	205	120	77	79	99	161	344	511	791	439	143	55	41	31	23	28	16	23	36	20	32	131	147	91	19
4	17	17	103	398	1102	4422	4659	4306	4383	1842	71	42	62	64	59	92	60	56	51	155	104	77	45	47	22	9	27	37	244	65	750	202	51	46	30
2	34	851	532	162	12	52	244	282	845	494	123	50	40	22	27	23	5	38	16	16	40	44	39	31	44	44	7	12	135	134	55	34	8	9	9
1	12	9	10	5	0		1	55	239	54	49	25	5	16	30	8	1	36	11	14	22	12		4	20	24	37	11	36	10	5	14	2	4	3
7	12	11	8	6			0		3	30	7	8	8	26	18	0	1	14	6	11	13	1		10	3	1	14	30	6	7	1	6	1		0
36	48	35	18						3	11	16	6	13	36	4	0	0	26	25	15	4	3	0	12	2	6	5	55	58	28	14	12	0	0	10
42	35	17	7							3	18	26	43	12				18	28	36	1	2	7	11	5	1	0	8	38	59	40	20	1	8	36
36	28	4								0	15	21	23	0		0			25	34	2		0	1	2	2	1	1	15	27	59	49	32	87	65
20	2									1	25	17	0						6	7	4	2	2	1	0	0			7	9	23	124	107	176	75
3	3	1	1	1	0					0	0		0								1	2	0	0	1	2	2	3	3	3	3	1	12	34	23
	0	1	1	1	1	0									0						0	1	0	0	0	1	1					0	0		1
																0								0	0								0	1	
	0													0																				1	
	0																																		

Figure 3b. AIRCRAFT 1000 - 301 hPa mean daily count. JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Global average number of observations in 24 hours = 86528

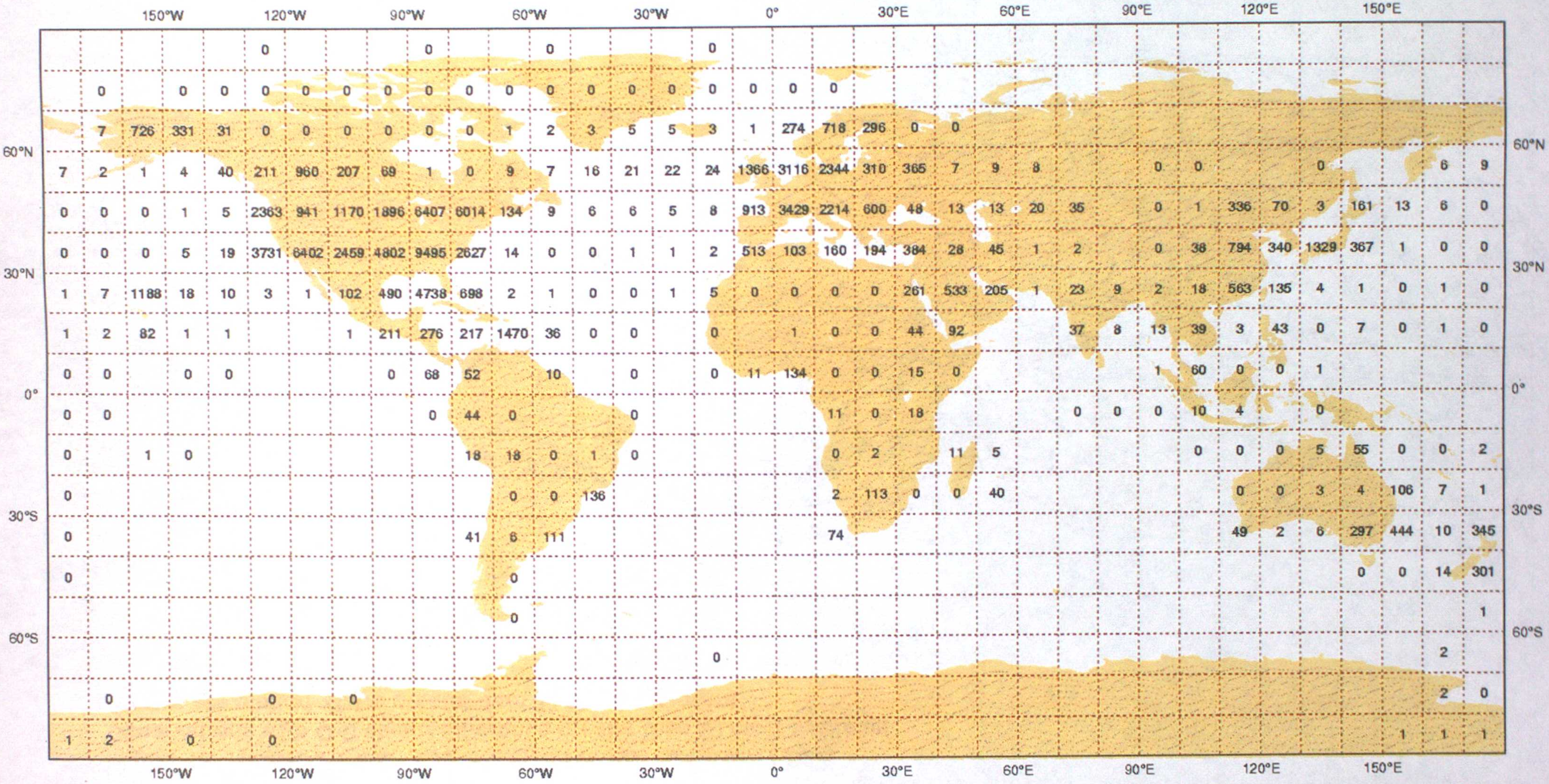

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 0 0 0
0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 726 331 31 0 0 0 0 0 0 1 2 3 5 5 3 1 274 718 296 0 0
7 2 1 4 40 211 960 207 69 1 0 9 7 16 21 22 24 1366 3116 2344 310 365 7 9 8 0 0 0 6 9
0 0 0 1 5 2363 941 1170 1896 6407 6014 134 9 6 6 5 8 913 3429 2214 600 48 13 13 20 35 0 1 336 70 3 161 13 6 0
0 0 0 5 19 3731 6402 2459 4802 9495 2627 14 0 0 1 1 2 513 103 160 194 384 28 45 1 2 0 38 794 340 1329 367 1 0 0
1 7 1188 18 10 3 1 102 490 4738 698 2 1 0 0 1 5 0 0 0 0 261 533 205 1 23 9 2 18 563 135 4 1 0 1 0
1 2 82 1 1 1 211 276 217 1470 36 0 0 0 1 0 0 44 92 37 8 13 39 3 43 0 7 0 1 0
0 0 0 0 0 68 52 10 0 0 11 134 0 0 15 0 1 60 0 0 1
0 0 0 44 0 0 11 0 18 0 0 0 10 4 0
0 1 0 18 18 0 1 0 0 2 11 5 0 0 0 5 55 0 0 2
0 0 0 136 2 113 0 0 40 0 0 3 4 106 7 1
0 41 6 111 74 49 2 6 297 444 10 345
0 0 0 0 14 301
0 1
0 2
0 0 0 2 0
1 2 0 0 1 1 1

Figure 4a. AIRCRAFT 300 - 150 hPa mean winds. JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

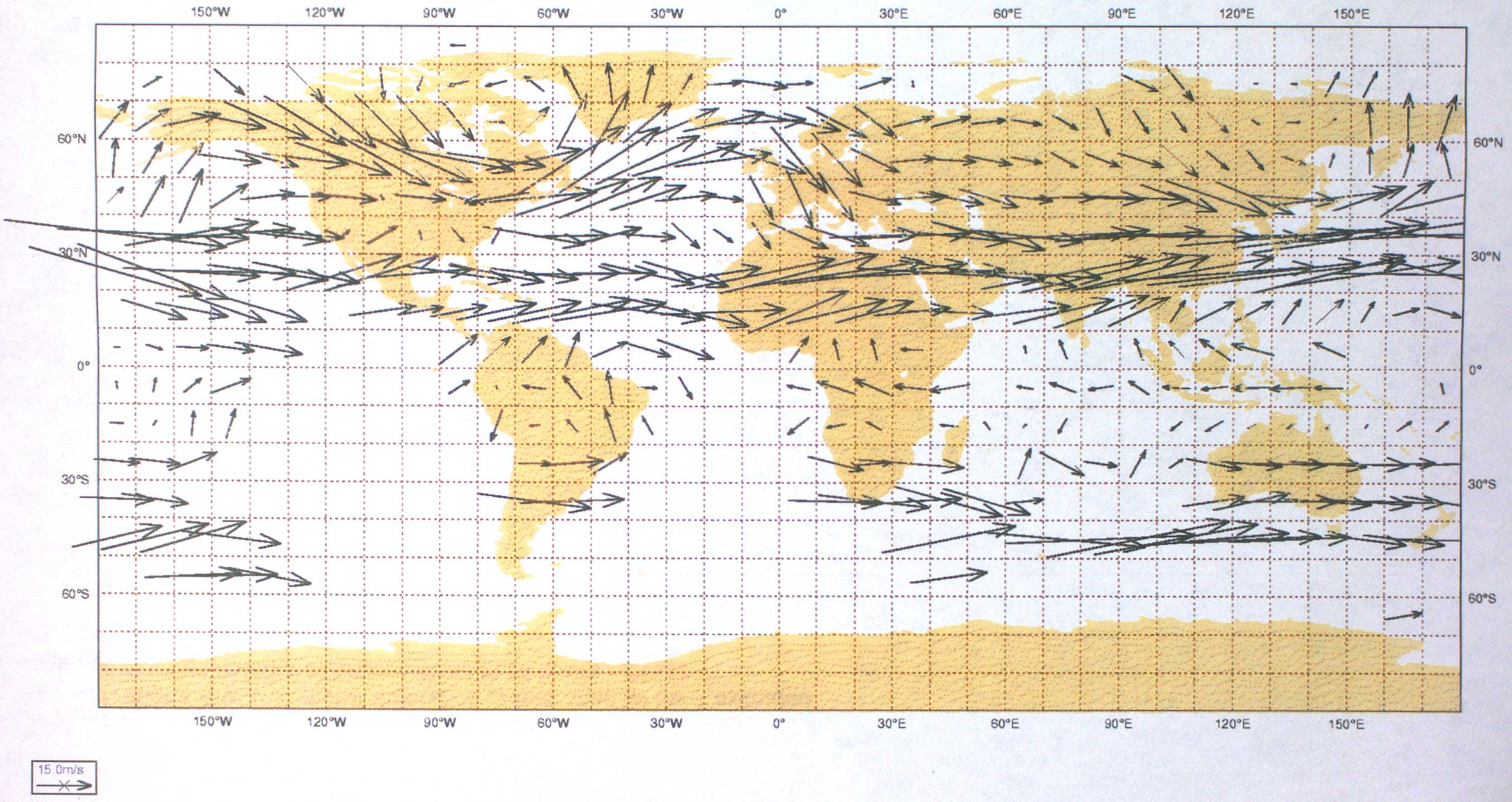
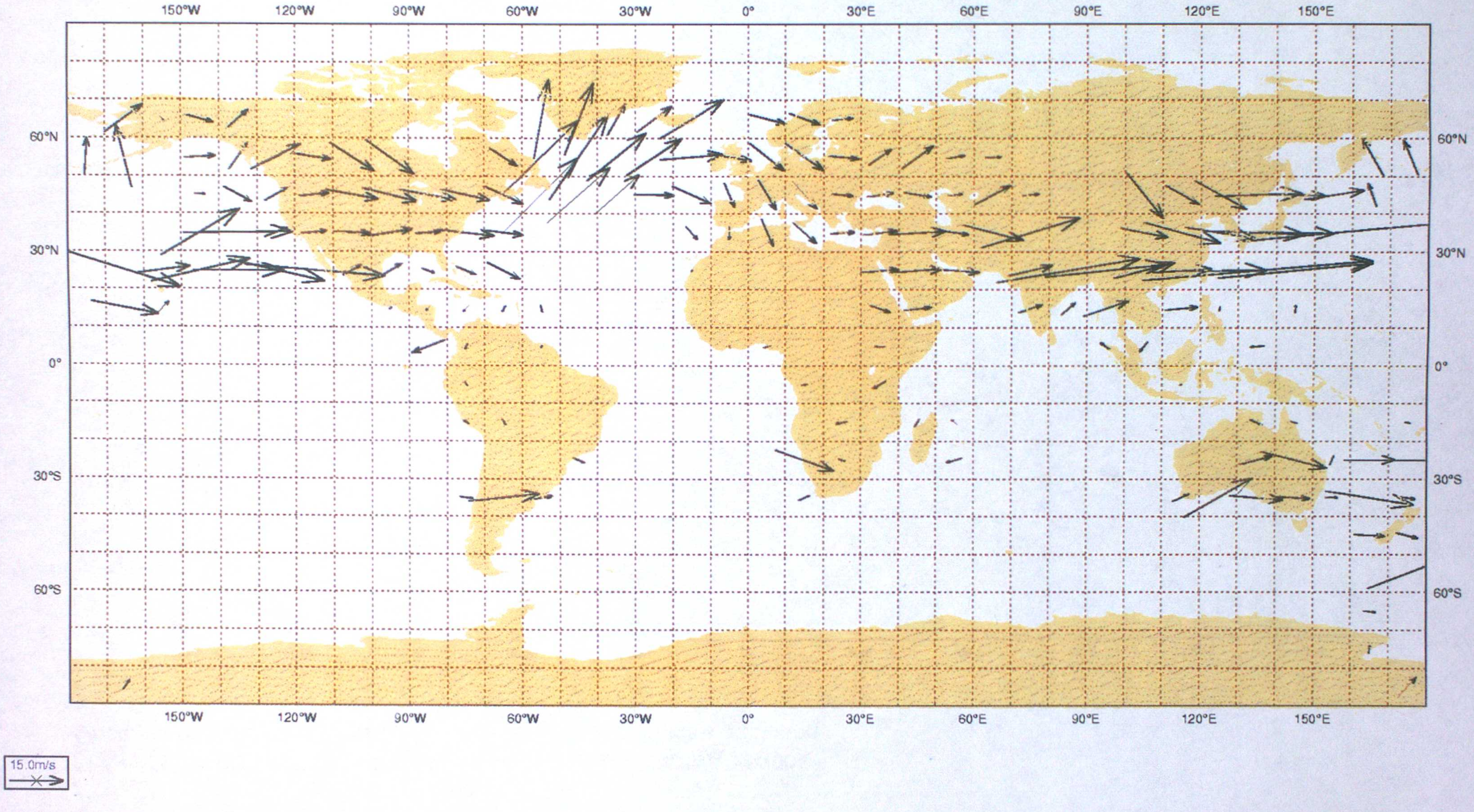

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 4b. AIRCRAFT 1000 - 301 hPa mean winds. JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present



150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5a. AIRCRAFT 300 - 150 hPa mean O-B winds. JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

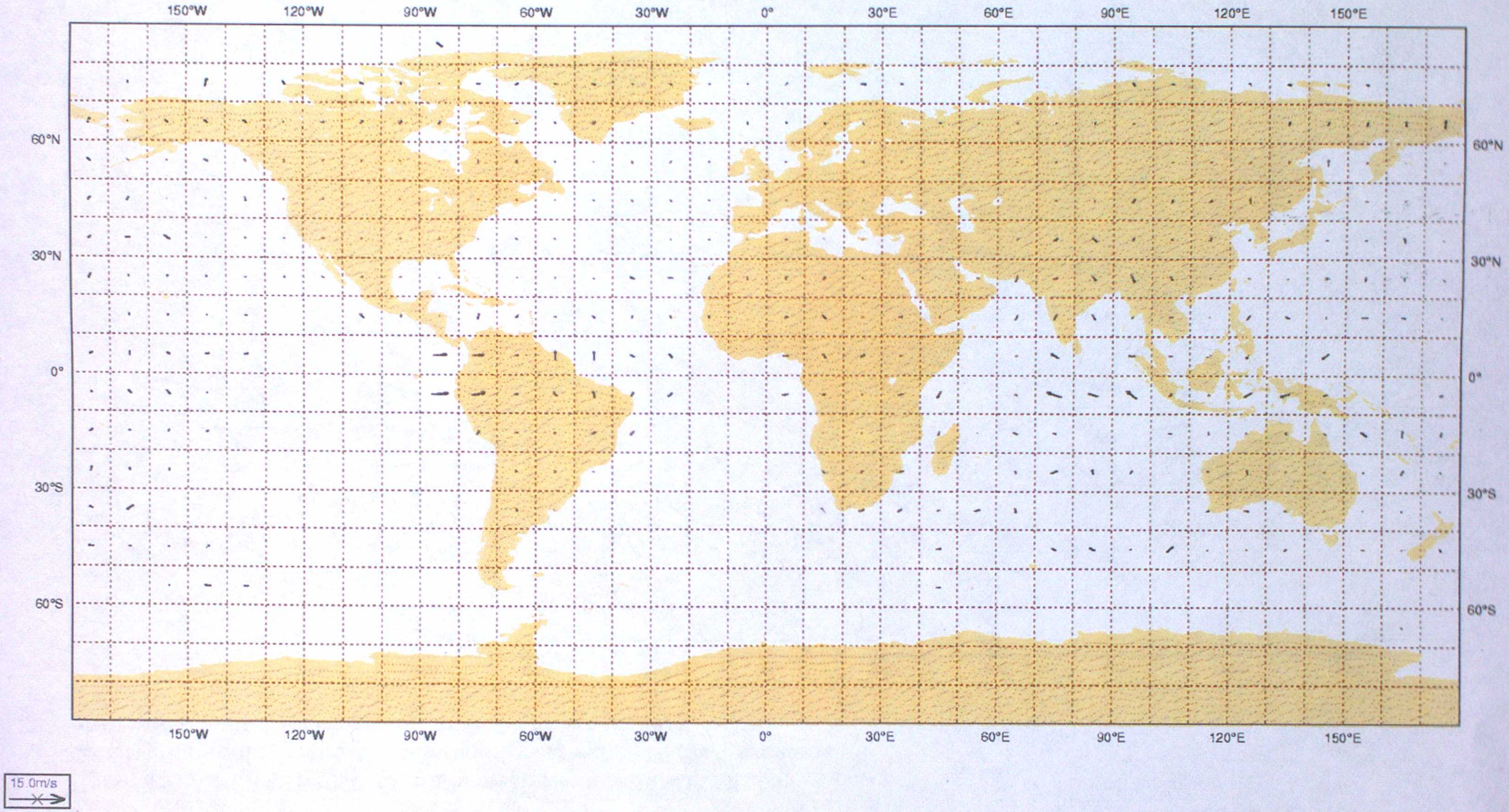

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 5b. AIRCRAFT 1000 - 301 hPa mean O-B winds. JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Arrows are plotted where greater than 30 obs are present

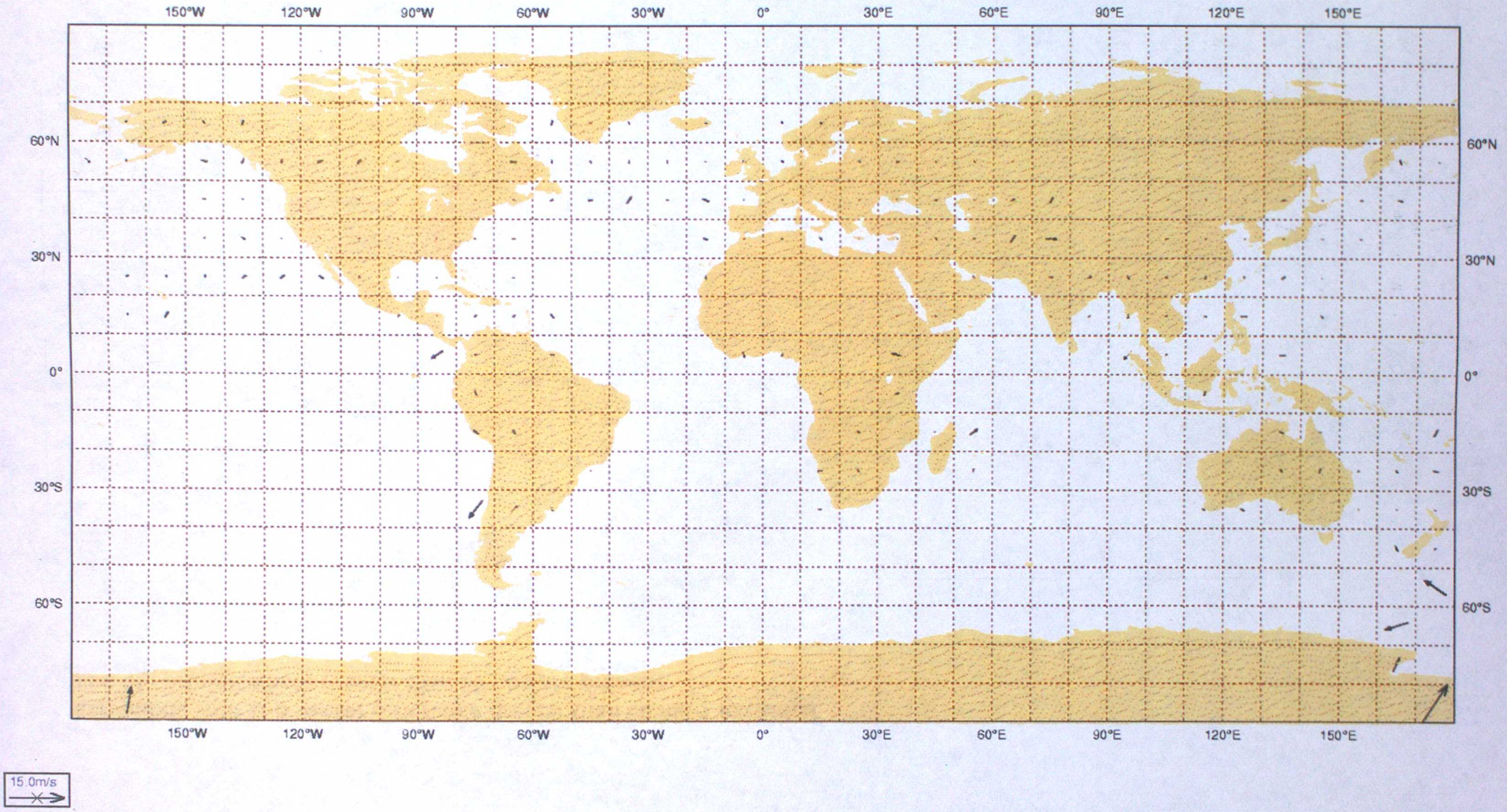

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 6a. AIRCRAFT 300 - 150 hPa mean O-B speeds (ms-1). JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

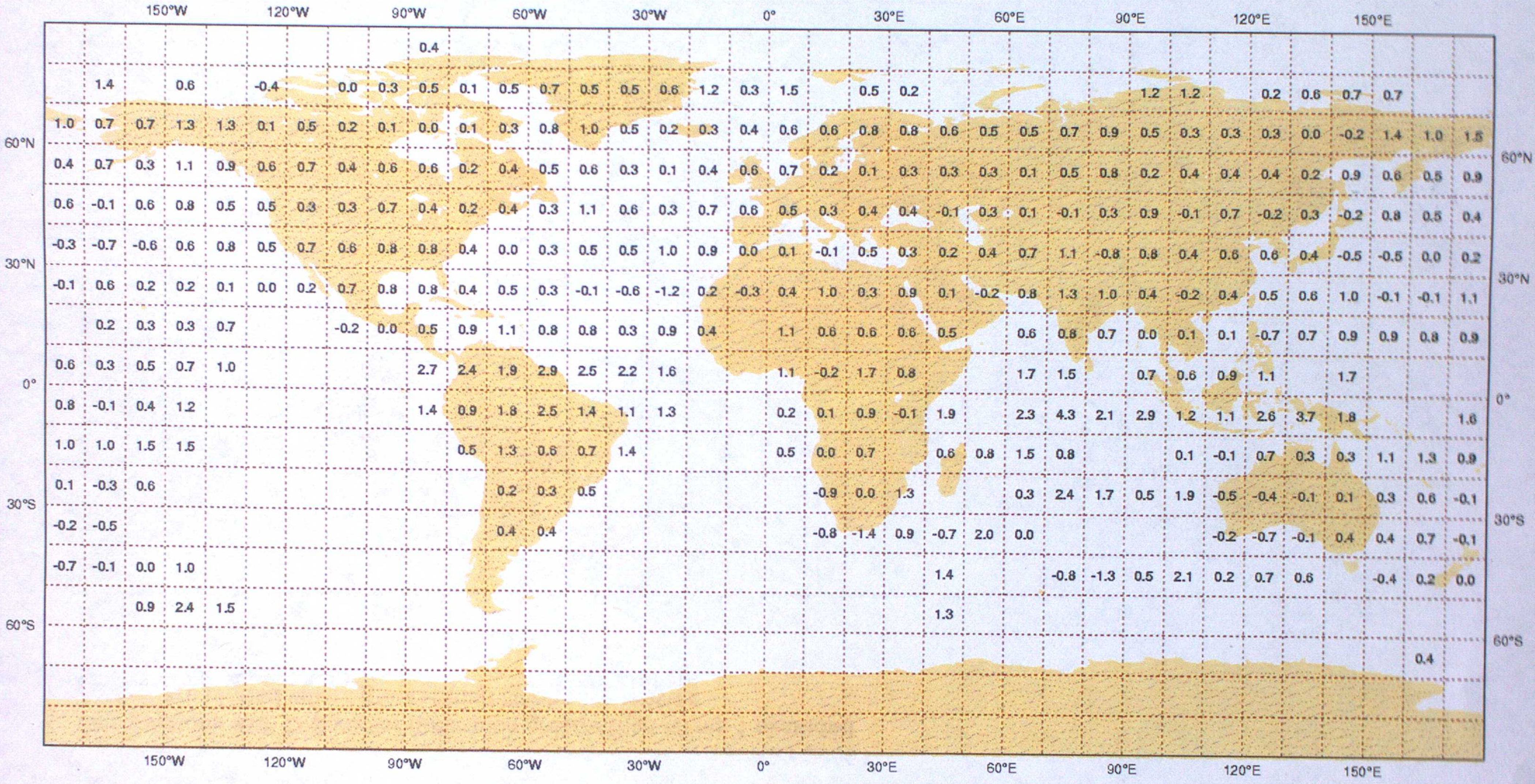

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0.4
1.4 0.6 -0.4 0.0 0.3 0.5 0.1 0.5 0.7 0.5 0.5 0.6 1.2 0.3 1.5 0.5 0.2 1.2 1.2 0.2 0.6 0.7 0.7
1.0 0.7 0.7 1.3 1.3 0.1 0.5 0.2 0.1 0.0 0.1 0.3 0.8 1.0 0.5 0.2 0.3 0.4 0.6 0.6 0.8 0.8 0.6 0.5 0.5 0.7 0.9 0.5 0.3 0.3 0.3 0.0 -0.2 1.4 1.0 1.5
0.4 0.7 0.3 1.1 0.9 0.6 0.7 0.4 0.6 0.6 0.2 0.4 0.5 0.6 0.3 0.1 0.4 0.6 0.7 0.2 0.1 0.3 0.3 0.3 0.1 0.5 0.8 0.2 0.4 0.4 0.4 0.2 0.9 0.6 0.5 0.9
0.6 -0.1 0.6 0.8 0.5 0.5 0.3 0.3 0.7 0.4 0.2 0.4 0.3 1.1 0.6 0.3 0.7 0.6 0.5 0.3 0.4 0.4 -0.1 0.3 0.1 -0.1 0.3 0.9 -0.1 0.7 -0.2 0.3 -0.2 0.8 0.5 0.4
-0.3 -0.7 -0.6 0.6 0.8 0.5 0.7 0.6 0.8 0.8 0.4 0.0 0.3 0.5 0.5 1.0 0.9 0.0 0.1 -0.1 0.5 0.3 0.2 0.4 0.7 1.1 -0.8 0.8 0.4 0.6 0.6 0.4 -0.5 -0.5 0.0 0.2
-0.1 0.6 0.2 0.2 0.1 0.0 0.2 0.7 0.8 0.8 0.4 0.5 0.3 -0.1 -0.6 -1.2 0.2 -0.3 0.4 1.0 0.3 0.9 0.1 -0.2 0.8 1.3 1.0 0.4 -0.2 0.4 0.5 0.6 1.0 -0.1 -0.1 1.1
0.2 0.3 0.3 0.7 -0.2 0.0 0.5 0.9 1.1 0.8 0.8 0.3 0.9 0.4 1.1 0.6 0.6 0.6 0.5 0.6 0.8 0.7 0.0 0.1 0.1 -0.7 0.7 0.9 0.9 0.8 0.9
0.6 0.3 0.5 0.7 1.0 2.7 2.4 1.9 2.9 2.5 2.2 1.6 1.1 -0.2 1.7 0.8 1.7 1.5 0.7 0.6 0.9 1.1 1.7
0.8 -0.1 0.4 1.2 1.4 0.9 1.8 2.5 1.4 1.1 1.3 0.2 0.1 0.9 -0.1 1.9 2.3 4.3 2.1 2.9 1.2 1.1 2.6 3.7 1.8 1.6
1.0 1.0 1.5 1.5 0.5 1.3 0.6 0.7 1.4 0.5 0.0 0.7 0.6 0.8 1.5 0.8 0.1 -0.1 0.7 0.3 0.3 1.1 1.3 0.9
0.1 -0.3 0.6 0.2 0.3 0.5 -0.9 0.0 1.3 0.3 2.4 1.7 0.5 1.9 -0.5 -0.4 -0.1 0.1 0.3 0.6 -0.1
-0.2 -0.5 0.4 0.4 -0.8 -1.4 0.9 -0.7 2.0 0.0 -0.2 -0.7 -0.1 0.4 0.4 0.7 -0.1
-0.7 -0.1 0.0 1.0 1.4 -0.8 -1.3 0.5 2.1 0.2 0.7 0.6 -0.4 0.2 0.0
0.9 2.4 1.5 1.3
0.4

Figure 6b. AIRCRAFT 1000 - 301 hPa mean O-B speeds (ms-1). JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

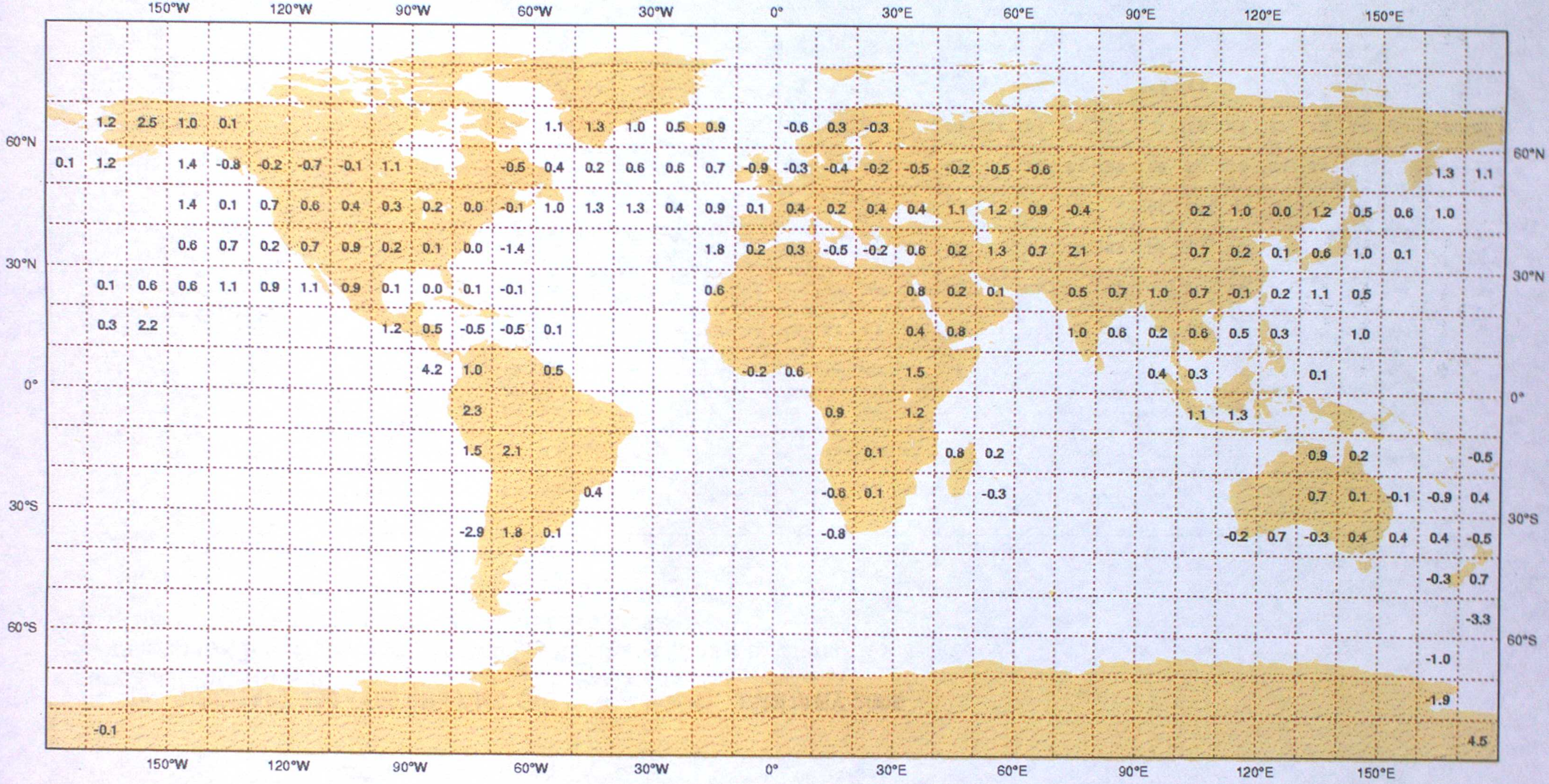

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
1.2 2.5 1.0 0.1 1.1 1.3 1.0 0.5 0.9 -0.6 0.3 -0.3
0.1 1.2 1.4 -0.8 -0.2 -0.7 -0.1 1.1 -0.5 0.4 0.2 0.6 0.6 0.7 -0.9 -0.3 -0.4 -0.2 -0.5 -0.2 -0.5 -0.6 1.3 1.1
1.4 0.1 0.7 0.6 0.4 0.3 0.2 0.0 -0.1 1.0 1.3 1.3 0.4 0.9 0.1 0.4 0.2 0.4 0.4 1.1 1.2 0.9 -0.4 0.2 1.0 0.0 1.2 0.5 0.6 1.0
0.6 0.7 0.2 0.7 0.9 0.2 0.1 0.0 -1.4 1.8 0.2 0.3 -0.5 -0.2 0.6 0.2 1.3 0.7 2.1 0.7 0.2 0.1 0.6 1.0 0.1
0.1 0.6 0.6 1.1 0.9 1.1 0.9 0.1 0.0 0.1 -0.1 0.6 0.8 0.2 0.1 0.5 0.7 1.0 0.7 -0.1 0.2 1.1 0.5
0.3 2.2 1.2 0.5 -0.5 -0.5 0.1 0.4 0.8 1.0 0.6 0.2 0.6 0.5 0.3 1.0
4.2 1.0 0.5 -0.2 0.6 1.5 0.4 0.3 0.1
2.3 0.9 1.2 1.1 1.3
1.5 2.1 0.1 0.8 0.2 0.9 0.2 -0.5
0.4 -0.6 0.1 -0.3 0.7 0.1 -0.1 -0.9 0.4
-2.9 1.8 0.1 -0.8 -0.2 0.7 -0.3 0.4 0.4 0.4 -0.5
-0.3 0.7
-3.3
-1.0
-1.9
-0.1 4.5

Figure 7a. AIRCRAFT 300 - 150 hPa RMS O-B vector (ms-1). JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

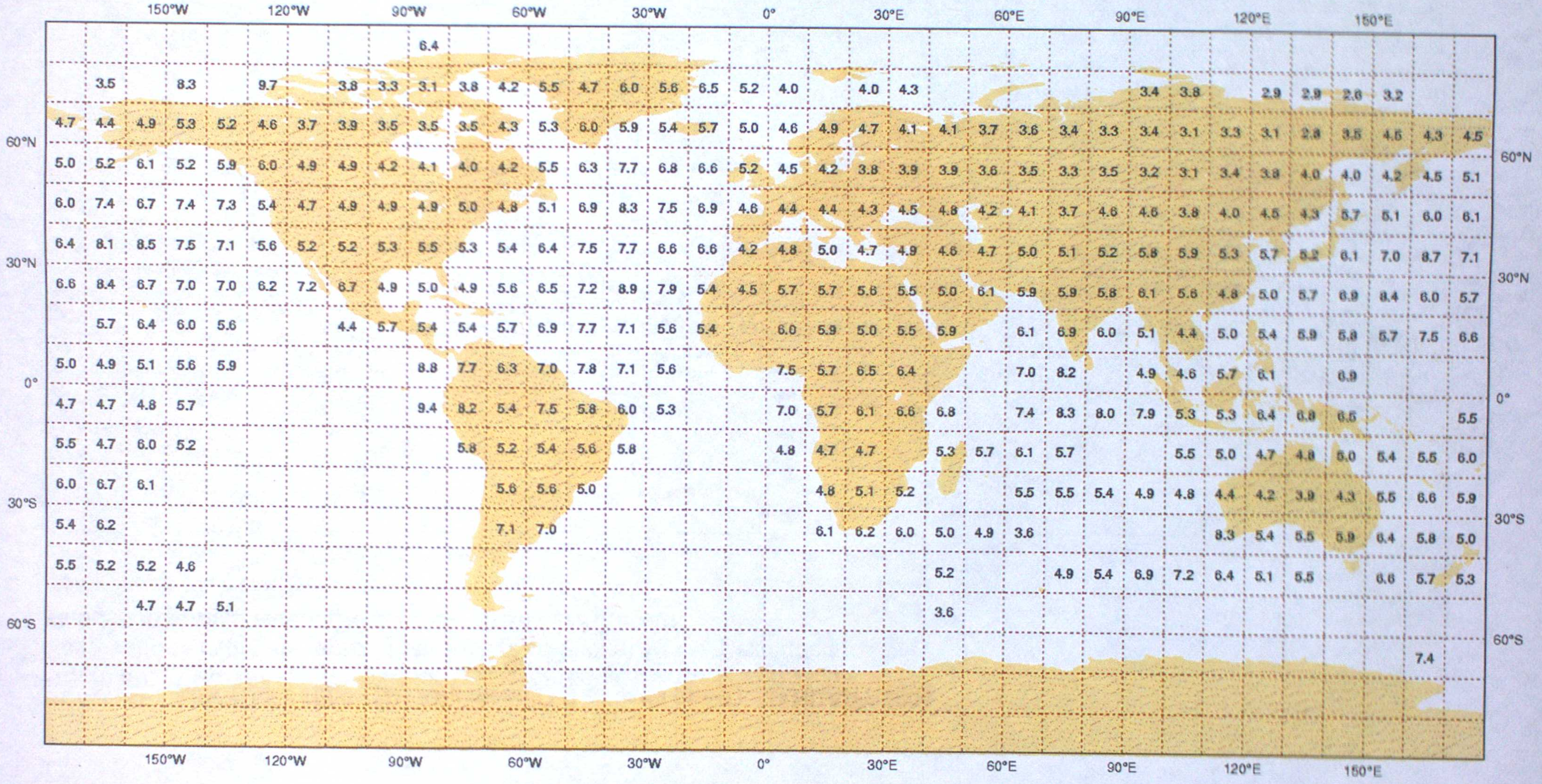

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
6.4
3.5 8.3 9.7 3.8 3.3 3.1 3.8 4.2 5.5 4.7 6.0 5.6 6.5 5.2 4.0 4.0 4.3 3.4 3.8 2.9 2.9 2.6 3.2
4.7 4.4 4.9 5.3 5.2 4.6 3.7 3.9 3.5 3.5 3.5 4.3 5.3 6.0 5.9 5.4 5.7 5.0 4.6 4.9 4.7 4.1 4.1 3.7 3.6 3.4 3.3 3.4 3.1 3.3 3.1 2.8 3.5 4.5 4.3 4.5
5.0 5.2 6.1 5.2 5.9 6.0 4.9 4.9 4.2 4.1 4.0 4.2 5.5 6.3 7.7 6.8 6.6 5.2 4.5 4.2 3.8 3.9 3.9 3.6 3.5 3.3 3.5 3.2 3.1 3.4 3.8 4.0 4.0 4.2 4.5 5.1
6.0 7.4 6.7 7.4 7.3 5.4 4.7 4.9 4.9 4.9 5.0 4.8 5.1 6.9 8.3 7.5 6.9 4.6 4.4 4.4 4.3 4.5 4.8 4.2 4.1 3.7 4.6 4.6 3.8 4.0 4.5 4.3 5.7 5.1 6.0 6.1
6.4 8.1 8.5 7.5 7.1 5.6 5.2 5.2 5.3 5.5 5.3 5.4 6.4 7.5 7.7 6.6 6.6 4.2 4.8 5.0 4.7 4.9 4.6 4.7 5.0 5.1 5.2 5.8 5.9 5.3 5.7 5.2 6.1 7.0 8.7 7.1
6.6 8.4 6.7 7.0 7.0 6.2 7.2 6.7 4.9 5.0 4.9 5.6 6.5 7.2 8.9 7.9 5.4 4.5 5.7 5.7 5.6 5.5 5.0 6.1 5.9 5.9 5.8 6.1 5.6 4.8 5.0 5.7 6.9 8.4 6.0 5.7
5.7 6.4 6.0 5.6 4.4 5.7 5.4 5.4 5.7 6.9 7.7 7.1 5.6 5.4 6.0 5.9 5.0 5.5 5.9 6.1 6.9 6.0 5.1 4.4 5.0 5.4 5.9 5.8 5.7 7.5 6.6
5.0 4.9 5.1 5.6 5.9 8.8 7.7 6.3 7.0 7.8 7.1 5.6 7.5 5.7 6.5 6.4 7.0 8.2 4.9 4.6 5.7 6.1 6.9
4.7 4.7 4.8 5.7 9.4 8.2 5.4 7.5 5.8 6.0 5.3 7.0 5.7 6.1 6.6 6.8 7.4 8.3 8.0 7.9 5.3 5.3 6.4 6.8 6.5 5.5
5.5 4.7 6.0 5.2 5.8 5.2 5.4 5.6 5.8 4.8 4.7 4.7 5.3 5.7 6.1 5.7 5.5 5.0 4.7 4.8 5.0 5.4 5.5 6.0
6.0 6.7 6.1 5.6 5.6 5.0 4.8 5.1 5.2 5.5 5.5 5.4 4.9 4.8 4.4 4.2 3.9 4.3 5.5 6.6 5.9
5.4 6.2 7.1 7.0 6.1 6.2 6.0 5.0 4.9 3.6 8.3 5.4 5.5 5.9 6.4 5.8 5.0
5.5 5.2 5.2 4.6 5.2 4.9 5.4 6.9 7.2 6.4 5.1 5.5 6.6 5.7 5.3
4.7 4.7 5.1 3.6
7.4
150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E

Figure 7b. AIRCRAFT 1000 - 301 hPa RMS O-B vector (ms-1). JANUARY 2005
Observations with O-B vector difference greater than 60 ms-1 excluded
Values are printed where greater than 30 obs are present

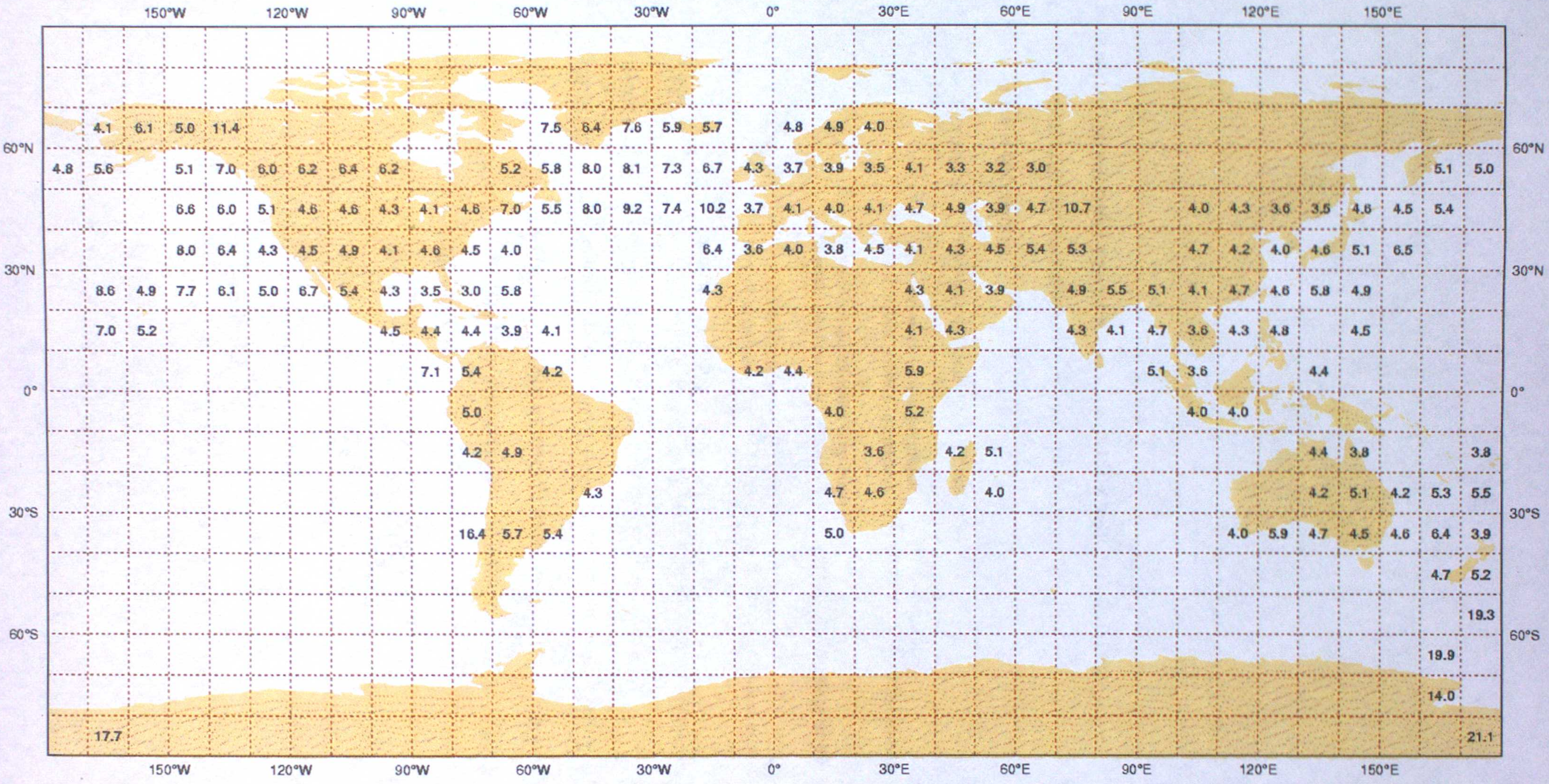

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
4.1 6.1 5.0 11.4 7.5 6.4 7.6 5.9 5.7 4.8 4.9 4.0
4.8 5.6 5.1 7.0 6.0 6.2 6.4 6.2 5.2 5.8 8.0 8.1 7.3 6.7 4.3 3.7 3.9 3.5 4.1 3.3 3.2 3.0 5.1 5.0
6.6 6.0 5.1 4.6 4.6 4.3 4.1 4.6 7.0 5.5 8.0 9.2 7.4 10.2 3.7 4.1 4.0 4.1 4.7 4.9 3.9 4.7 10.7 4.0 4.3 3.6 3.5 4.6 4.5 5.4
8.0 6.4 4.3 4.5 4.9 4.1 4.6 4.5 4.0 6.4 3.6 4.0 3.8 4.5 4.1 4.3 4.5 5.4 5.3 4.7 4.2 4.0 4.6 5.1 6.5
8.6 4.9 7.7 6.1 5.0 6.7 5.4 4.3 3.5 3.0 5.8 4.3 4.3 4.1 3.9 4.9 5.5 5.1 4.1 4.7 4.6 5.8 4.9
7.0 5.2 4.5 4.4 4.4 3.9 4.1 4.1 4.3 4.3 4.1 4.7 3.6 4.3 4.8 4.5
7.1 5.4 4.2 4.2 4.4 5.9 5.1 3.6 4.4
5.0 4.0 5.2 4.0 4.0
4.2 4.9 3.6 4.2 5.1 4.4 3.8 3.8
4.3 4.7 4.6 4.0 4.2 5.1 4.2 5.3 5.5
16.4 5.7 5.4 5.0 4.0 5.9 4.7 4.5 4.6 6.4 3.9
4.7 5.2
19.3
19.9
14.0
17.7 21.1

TABLE 5

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 1000.0 - 30.0 hPa

Element monitored :GEOPOTENTIAL HEIGHT IN metres

Parameters monitored :NUM OBS :Number of observations available at level shown during period.

:NUM GROSS :Number of gross errors at level shown during period.

:% REJ :Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.

:SD :SD of difference of observations from background values at level shown excluding those with gross errors.

:BIAS :Mean difference of observations from background values at level shown excluding those with gross errors.

:RMS :Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

:NUM LEVELS :Number of levels satisfying selection criteria.

GROSS ERROR LIMITS :Defined in Appendix I.1

SELECTION CRITERIA : ≥3 levels with ≥10 observations and ≥ 100 m weighted RMS.

ONLY THE WORST LEVEL IS SHOWN WITH UNWEIGHTED RMS

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	SD	BIAS	RMS	NUM LEVELS
22845	12	Z	1000	61/ 39	13	17	39.3	-40.1	56.2	6
24125	00	Z	1000	68/ 112	14	10	28.0	-59.6	65.9	4
24125	12	Z	1000	68/ 112	17	14	30.3	-59.1	66.4	13
27707	12	Z	1000	54/ 35	10	13	34.5	-44.3	56.2	10
30054	12	Z	70	59/ 113	23	2	107.7	-194.4	222.3	10
30965	00	Z	100	50/ 117	23	0	62.8	-161.8	173.6	9
30965	12	Z	100	50/ 117	15	0	43.9	-199.7	204.5	9
31369	00	Z	1000	53/ 141	18	6	28.6	-49.2	56.9	4
33041	00	Z	1000	52/ 31	12	2	30.0	-20.7	36.5	4
42027	00	Z	200	34/ 75	16	1	54.1	-61.5	81.9	4
42101	12	Z	200	30/ 76	20	1	104.2	-25.8	107.4	5
42182	00	Z	1000	29/ 77	16	9	13.9	-79.7	80.9	5
42182	12	Z	1000	29/ 77	18	11	9.1	-80.8	81.3	12
42314	00	Z	1000	27/ 95	2	23	4.0	-95.0	95.1	4
42314	12	Z	1000	27/ 95	1	24	0.0	-97.0	97.0	7
42339	00	Z	1000	26/ 73	5	18	9.1	-87.6	88.1	9
42361	12	Z	1000	26/ 78	15	12	12.8	-77.4	78.4	5
42369	00	Z	150	27/ 81	11	3	100.5	-130.4	164.6	9
42369	12	Z	250	27/ 81	15	3	50.5	-95.2	107.8	7
42410	00	Z	1000	26/ 92	16	6	45.1	-74.0	86.7	8
42410	12	Z	1000	26/ 92	5	19	13.5	-90.0	91.0	6
42647	00	Z	150	23/ 73	11	1	82.3	-110.3	137.6	4
42701	00	Z	150	23/ 85	24	0	75.4	-79.2	109.4	4
42701	12	Z	200	23/ 85	25	1	69.7	-82.3	107.9	6
42809	00	Z	200	23/ 88	23	1	47.7	-129.7	138.2	9
42809	12	Z	200	23/ 88	29	1	46.7	-97.6	108.2	6
42867	00	Z	400	21/ 79	26	0	79.7	-0.6	79.7	8
42867	12	Z	200	21/ 79	20	0	71.6	-103.3	125.7	7
42971	00	Z	150	20/ 86	13	0	105.2	-90.7	138.9	4
42971	12	Z	150	20/ 86	22	0	103.9	-77.4	129.5	5
43003	00	Z	200	19/ 73	21	1	69.5	-141.0	157.2	11
43003	12	Z	1000	19/ 73	30	0	12.2	-50.3	51.7	7
43014	12	Z	400	20/ 75	25	2	43.1	47.0	63.8	5
43128	00	Z	150	17/ 78	21	0	43.5	-152.3	158.4	6
43128	12	Z	850	17/ 78	27	1	30.2	31.9	43.9	10
43192	00	Z	1000	15/ 74	14	12	4.7	-92.0	92.1	8
43192	12	Z	1000	15/ 74	6	22	2.7	-97.7	97.7	6
43285	00	Z	150	13/ 75	14	1	96.2	-142.6	172.0	9
43285	12	Z	150	13/ 75	16	0	118.5	-40.3	125.2	6
43311	00	Z	150	11/ 73	12	0	68.5	-96.3	118.2	4
43311	12	Z	150	11/ 73	16	0	114.0	-34.6	119.1	4
43333	12	Z	150	12/ 93	17	0	66.6	-121.6	138.6	4
43346	00	Z	100	11/ 80	12	2	93.0	-177.3	200.2	6
43346	12	Z	150	11/ 80	20	0	50.9	-110.4	121.6	4
43353	00	Z	1000	10/ 76	16	0	4.3	-67.3	67.4	6
43353	12	Z	1000	10/ 76	17	0	6.4	-83.2	83.4	5
43369	00	Z	150	8/ 73	16	1	105.5	-76.9	130.6	4
43371	00	Z	100	8/ 77	17	2	105.0	-146.1	180.0	8
43371	12	Z	30	8/ 77	9	1	83.0	192.2	209.4	5
61902	12	Z	1000	-8/ -14	19	0	19.2	61.9	64.8	8
91366	00	Z	50	9/ 168	22	0	112.5	181.6	213.7	4
96935	00	Z	1000	-7/ 113	7	6	6.3	-88.0	88.2	9

Figure 8. TEMP 500 hPa geopotential mean daily count. JANUARY 2005
All hours
Global average number of observations in 24 hours = 1133

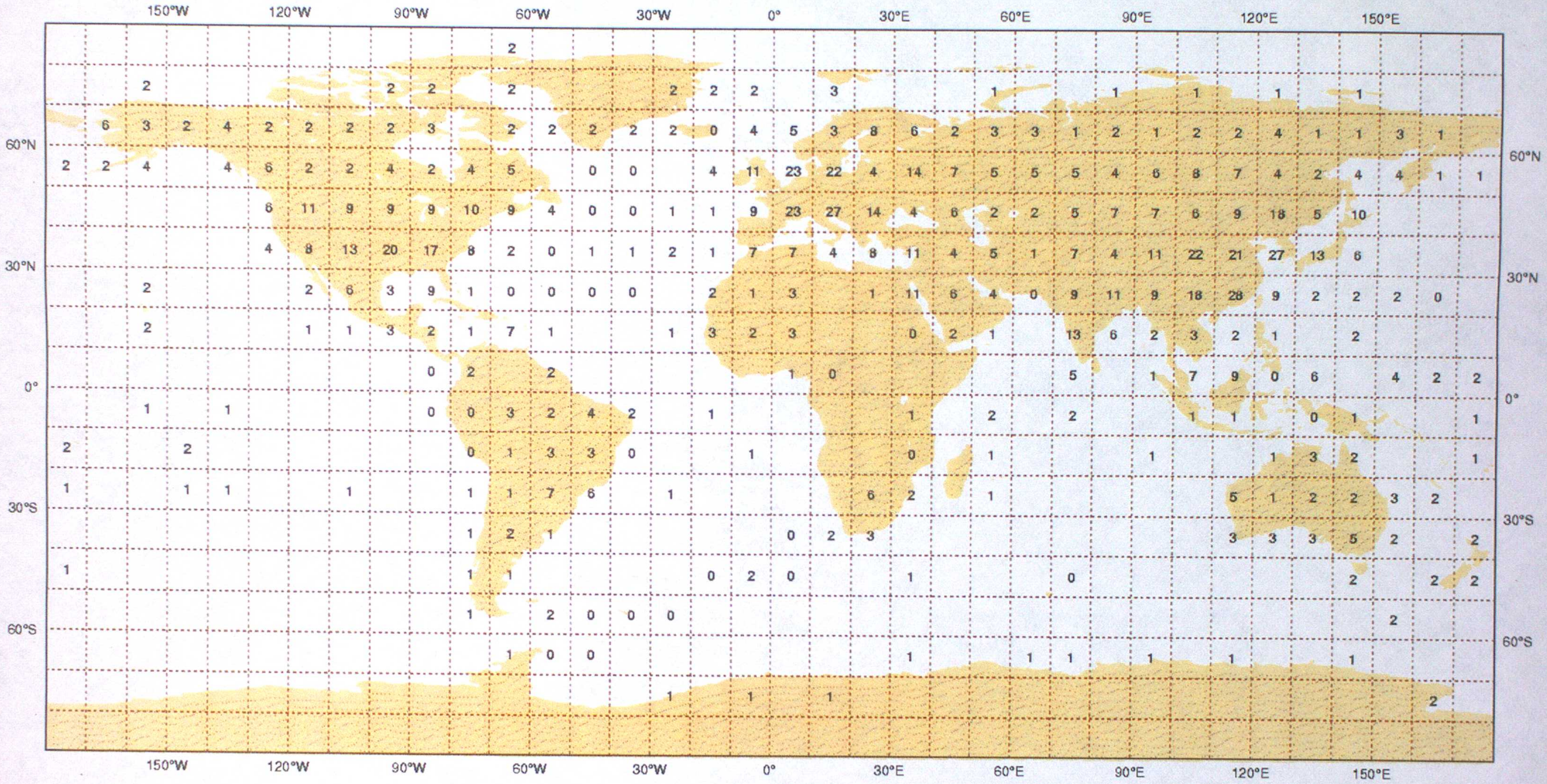

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
2
2 2 2 2 2 2 2 3 1 1 1 1 1
6 3 2 4 2 2 2 2 3 2 2 2 2 2 0 4 5 3 8 6 2 3 3 1 2 1 2 2 4 1 1 3 1
2 2 4 4 6 2 2 4 2 4 5 0 0 4 11 23 22 4 14 7 5 5 5 4 6 8 7 4 2 4 4 1 1
6 11 9 9 9 10 9 4 0 0 1 1 9 23 27 14 4 6 2 2 5 7 7 6 9 18 5 10
4 8 13 20 17 8 2 0 1 1 2 1 7 7 4 8 11 4 5 1 7 4 11 22 21 27 13 6
2 2 6 3 9 1 0 0 0 0 2 1 3 1 11 6 4 0 9 11 9 18 28 9 2 2 2 0
2 1 1 3 2 1 7 1 1 3 2 3 0 2 1 13 6 2 3 2 1 2
0 2 2 1 0 5 1 7 9 0 6 4 2 2
1 1 0 0 3 2 4 2 1 1 2 2 1 1 0 1 1
2 2 0 1 3 3 0 1 0 1 1 1 3 2 1
1 1 1 1 1 1 7 6 1 6 2 1 5 1 2 2 3 2
1 2 1 0 2 3 3 3 3 5 2 2
1 1 1 0 2 0 1 0 2 2 2
1 2 0 0 0 2
1 0 0 1 1 1 1 1 1
1 1 1 2

TABLE 6

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures		
Period		:One calendar month.
Data monitored		:Reports from each unique identifier for radiosonde TEMPs.
Area monitored		:90°N - 90°S, 180°W - 180°E.
Standard of comparison		:Background field from UKMO global model.
Observation times		:00 UTC and 12 UTC.
Level(s) monitored		:Standard levels between 1000.0 - 100.0 hPa
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored		
	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:% REJ	:Percentage of observations rejected by quality control at level shown during period excluding those with gross errors.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.
	:NUM LEVELS	:Number of levels satisfying selection criteria.
GROSS ERROR LIMITS	:Defined in Appendix I.2	
SELECTION CRITERIA	: ≥ 10 observations and ≥ 15 m s^{-1} RMS vector wind.	

ONLY THE STANDARD LEVEL BETWEEN 1000 - 100 hPa WITH HIGHEST RMS IS SHOWN

WMO IDENT	OBS TIME	ELM	LEV	LAT/LONG	NUM OBS	NUM GROSS	% REJ	UBIAS	VBIAS	RMS	LEVELS
03882	00	V	150	51/ 0	24	0	4	-2.7	2.9	17.9	1
07481	00	V	200	46/ 5	27	0	7	-4.2	3.7	22.5	2
41718	12	V	500	29/ 71	10	0	100	-10.3	1.8	15.2	1
41923	00	V	250	24/ 90	12	0	16	-7.0	1.0	19.3	1
42101	00	V	400	30/ 76	10	0	20	0.2	2.6	22.8	1
42182	00	V	250	29/ 77	23	1	100	-2.7	-13.3	18.4	4
42182	12	V	200	29/ 77	24	0	100	-9.9	-11.6	23.0	5
42339	00	V	100	26/ 73	14	0	100	-7.8	0.7	18.7	1
42361	12	V	400	26/ 78	10	0	100	0.6	14.2	19.5	2
42369	00	V	100	27/ 81	11	0	100	-11.2	-2.9	17.8	2
42369	12	V	250	27/ 81	18	0	100	0.7	-5.1	15.3	1
42410	00	V	150	26/ 92	11	0	100	2.3	0.9	17.7	1
42410	12	V	300	26/ 92	13	0	100	-11.5	2.6	27.2	1
42492	00	V	300	26/ 85	11	0	45	-7.8	7.4	31.2	1
42492	12	V	300	26/ 85	15	0	20	-11.9	2.3	26.1	2
42701	00	V	150	23/ 85	24	1	100	-22.3	-1.9	25.3	5
42701	12	V	200	23/ 85	26	0	100	-21.9	-3.6	26.3	5
43369	00	V	250	8/ 73	25	0	96	2.9	-2.6	15.1	1
43369	12	V	200	8/ 73	15	0	100	-2.1	1.3	15.4	1
47058	00	V	300	39/ 126	12	0	91	-20.9	1.0	28.0	3
55299	00	V	200	31/ 92	27	0	7	-1.9	0.9	16.2	1
56146	00	V	200	32/ 100	10	0	100	7.8	0.5	15.6	1
58968	00	V	250	25/ 122	22	0	100	-7.0	-13.9	16.5	3
58968	12	V	300	25/ 122	27	0	100	-7.5	-13.3	16.5	3
60566	12	V	200	32/ 4	10	0	100	-9.3	-3.2	18.6	1
60571	12	V	150	31/ -2	27	1	3	-4.0	0.2	17.4	1
60590	12	V	300	31/ 3	11	0	100	-12.9	-1.1	19.7	3
60620	12	V	250	28/ 0	11	0	100	-24.2	-6.1	27.5	3
61641	00	V	150	15/ -17	23	0	8	-5.8	1.9	29.0	1
62337	00	V	200	31/ 34	23	1	100	-13.7	13.4	28.3	5
62337	12	V	100	31/ 34	19	0	100	-14.0	7.6	28.2	5
62378	00	V	250	30/ 31	14	0	100	-6.3	9.0	34.9	1
62378	12	V	150	30/ 31	13	0	100	-23.7	0.4	50.9	4
62403	00	V	100	26/ 33	10	0	100	4.9	1.6	17.6	3
62403	12	V	150	26/ 33	21	0	100	0.5	4.9	26.4	5
62414	00	V	150	24/ 33	14	0	100	-14.0	-2.2	37.2	1
68512	12	V	150	-30/ 18	16	0	100	-1.5	-0.4	18.1	3
72376	00	V	300	37/-108	26	0	100	-3.7	-1.2	17.1	1
76405	12	V	150	24/-110	26	0	3	-3.3	0.0	22.2	1
91165	00	V	200	22/-159	25	0	88	-1.5	14.4	22.5	4
91165	12	V	150	22/-159	25	0	92	-0.8	18.1	25.4	4
92044	00	V	100	-2/ 147	21	0	38	-1.1	-5.4	15.4	1

Figure 9. TEMP/PILOT 300 hPa wind mean daily count. JANUARY 2005
All hours
Global average number of observations in 24 hours = 1263

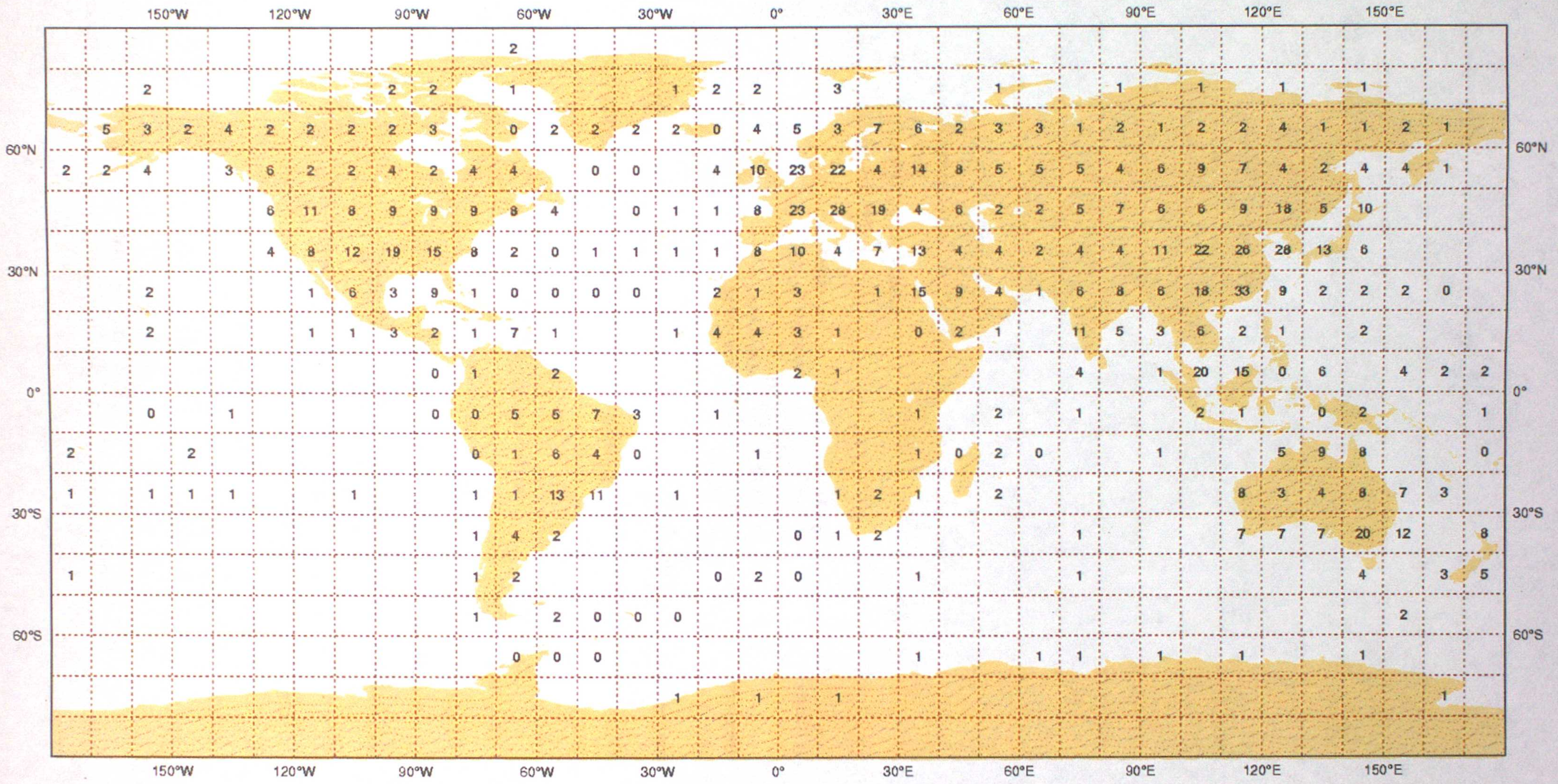

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
2
2 2 2 1 1 2 2 3 1 1 1 1 1
5 3 2 4 2 2 2 2 3 0 2 2 2 2 0 4 5 3 7 6 2 3 3 1 2 1 2 2 4 1 1 2 1
2 2 4 3 6 2 2 4 2 4 4 0 0 4 10 23 22 4 14 8 5 5 5 4 6 9 7 4 2 4 4 1
6 11 8 9 9 9 8 4 0 1 1 8 23 28 19 4 6 2 2 5 7 6 6 9 18 5 10
4 8 12 19 15 8 2 0 1 1 1 1 8 10 4 7 13 4 4 2 4 4 11 22 26 28 13 6
2 1 6 3 9 1 0 0 0 0 2 1 3 1 15 9 4 1 6 8 6 18 33 9 2 2 2 0
2 1 1 3 2 1 7 1 1 4 4 3 1 0 2 1 11 5 3 6 2 1 2
0 1 2 2 1 4 1 20 15 0 6 4 2 2
0 1 0 0 5 5 7 3 1 1 2 1 2 1 0 2 1
2 2 0 1 6 4 0 1 1 0 2 0 1 5 9 8 0
1 1 1 1 1 1 1 13 11 1 1 2 1 2 8 3 4 8 7 3
1 4 2 0 1 2 1 7 7 7 20 12 8
1 1 2 0 2 0 1 1 4 3 5
1 2 0 0 0 2
0 0 0 1 1 1 1 1 1
1 1 1 1

TABLE 7

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from each unique identifier for radiosonde TEMPs.

Area monitored :90°N - 90°S, 180°W - 180°E.

Standard of comparison :Background field from UKMO global model.

Observation times :00 UTC and 12 UTC.

Level(s) monitored :Standard levels between 500.0 - 150.0 hPa

Element monitored :WIND DIRECTION in degrees

Parameters monitored

:NUM OBS :Average number of observations at all levels.

:BIAS :Mean difference of observations from background values from all levels.

:MAX SPREAD :(For observation - background values) Maximum absolute difference of SD at any level from SD at all levels

:SD :SD of difference of observations from background values at all levels.

SELECTION CRITERIA :NUM OBS ≥ 5, and
ABSOLUTE BIAS ≥ 10°, with
SD < 30°, and
MAX SPREAD < 10°

WMO IDENT	OBS TIME	ELM	LAT/LONG	NUM OBS	BIAS	MAX SPREAD	SD
33791	12	DD	48/ 33	27	-12.5	6.2	12.6
42182	00	DD	29/ 77	24	19.4	3.5	8.0
42182	12	DD	29/ 77	25	14.3	4.2	12.8
43150	12	DD	18/ 83	13	-11.1	7.0	17.2
43295	00	DD	13/ 78	20	-11.3	4.3	16.4
43295	12	DD	13/ 78	23	-10.5	5.8	19.6
48455	12	DD	14/ 101	9	16.3	5.4	24.0
58968	00	DD	25/ 122	23	16.8	2.0	4.8
58968	12	DD	25/ 122	26	17.6	0.8	3.2
59758	00	DD	20/ 110	17	11.8	4.1	10.3
59758	12	DD	20/ 110	20	10.5	2.6	9.4
62337	00	DD	31/ 34	23	-20.7	2.2	5.4
62337	12	DD	31/ 34	27	-19.4	3.7	8.5
78954	12	DD	13/ -59	16	-12.6	6.7	15.0
91165	00	DD	22/-159	24	-18.9	2.0	18.7
91165	12	DD	22/-159	21	-18.4	1.8	18.7
97072	00	DD	-1/ 120	7	-10.1	9.9	24.4

MONITORING OF SATELLITE WINDS

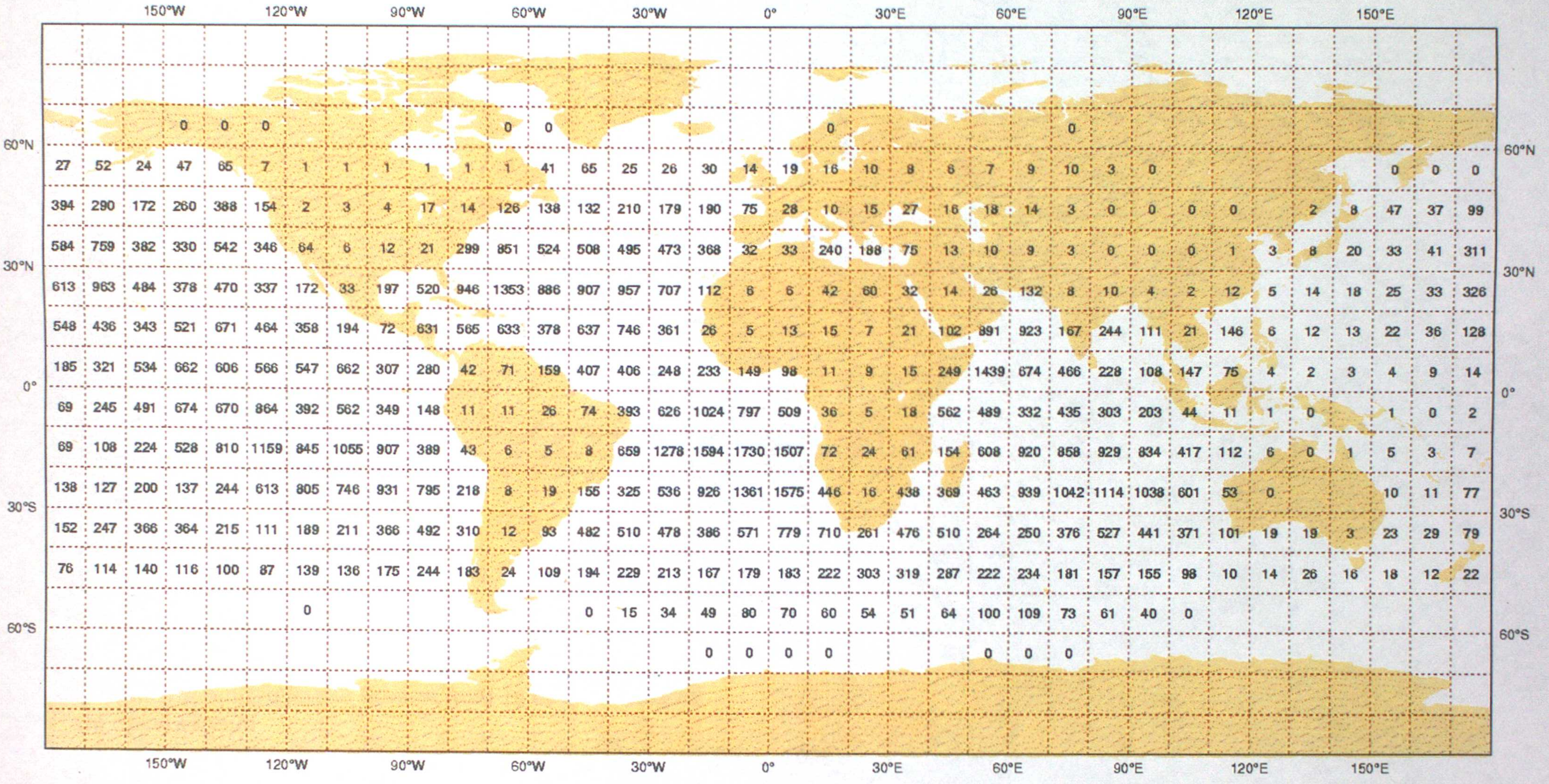
MONITORING CENTRE: EXETER

MONTH: Jan 2005

Monitoring procedures

Period	:One calendar month.
Data monitored	:Reports from GOES-9, GOES-10, GOES-12, METEOSAT-5, METEOSAT-7
Standard of comparison	:Background field from UKMO global model.
Selection Criteria	:number of observations > 10.
Data Extracted	:Layer 701 - 1000 hPa 401 - 700 hPa 101 - 400 hPa
	:Mean wind
	:Mean observation minus background vector wind differences
	:Mean observation minus background speed differences
	:RMS of observation minus background vector differences

Figure 10. SATOB 701 - 1000 hPa mean daily count. JANUARY 2005
Global average number of observations in 24 hours = 103935



			0	0	0						0	0							0						0										
27	52	24	47	65	7	1	1	1	1	1	1	41	65	25	26	30	14	19	16	10	8	6	7	9	10	3	0						0	0	0
394	290	172	260	388	154	2	3	4	17	14	126	138	132	210	179	190	75	28	10	15	27	16	18	14	3	0	0	0	0		2	8	47	37	99
584	759	382	330	542	346	64	6	12	21	299	851	524	508	495	473	368	32	33	240	188	75	13	10	9	3	0	0	0	1	3	8	20	33	41	311
613	963	484	378	470	337	172	33	197	520	946	1353	886	907	957	707	112	6	6	42	60	32	14	26	132	8	10	4	2	12	5	14	18	25	33	326
548	436	343	521	671	464	358	194	72	631	565	633	378	637	746	361	26	5	13	15	7	21	102	891	923	167	244	111	21	146	6	12	13	22	36	128
185	321	534	662	606	566	547	662	307	280	42	71	159	407	406	248	233	149	98	11	9	15	249	1439	674	466	228	108	147	75	4	2	3	4	9	14
69	245	491	674	670	864	392	562	349	148	11	11	26	74	393	626	1024	797	509	36	5	18	562	489	332	435	303	203	44	11	1	0		1	0	2
69	108	224	528	810	1159	845	1055	907	389	43	6	5	8	659	1278	1594	1730	1507	72	24	61	154	608	920	858	929	834	417	112	6	0	1	5	3	7
138	127	200	137	244	613	805	746	931	795	218	8	19	155	325	536	926	1361	1575	446	16	438	369	463	939	1042	1114	1038	601	53	0			10	11	77
152	247	366	364	215	111	189	211	366	492	310	12	93	482	510	478	386	571	779	710	261	476	510	264	250	376	527	441	371	101	19	19	3	23	29	79
76	114	140	116	100	87	139	136	175	244	183	24	109	194	229	213	167	179	183	222	303	319	287	222	234	181	157	155	98	10	14	26	16	18	12	22
						0							0	15	34	49	80	70	60	54	51	64	100	109	73	61	40	0							
																0	0	0	0				0	0	0										

Figure 11. SATOB 701 - 1000 hPa vector mean wind. JANUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

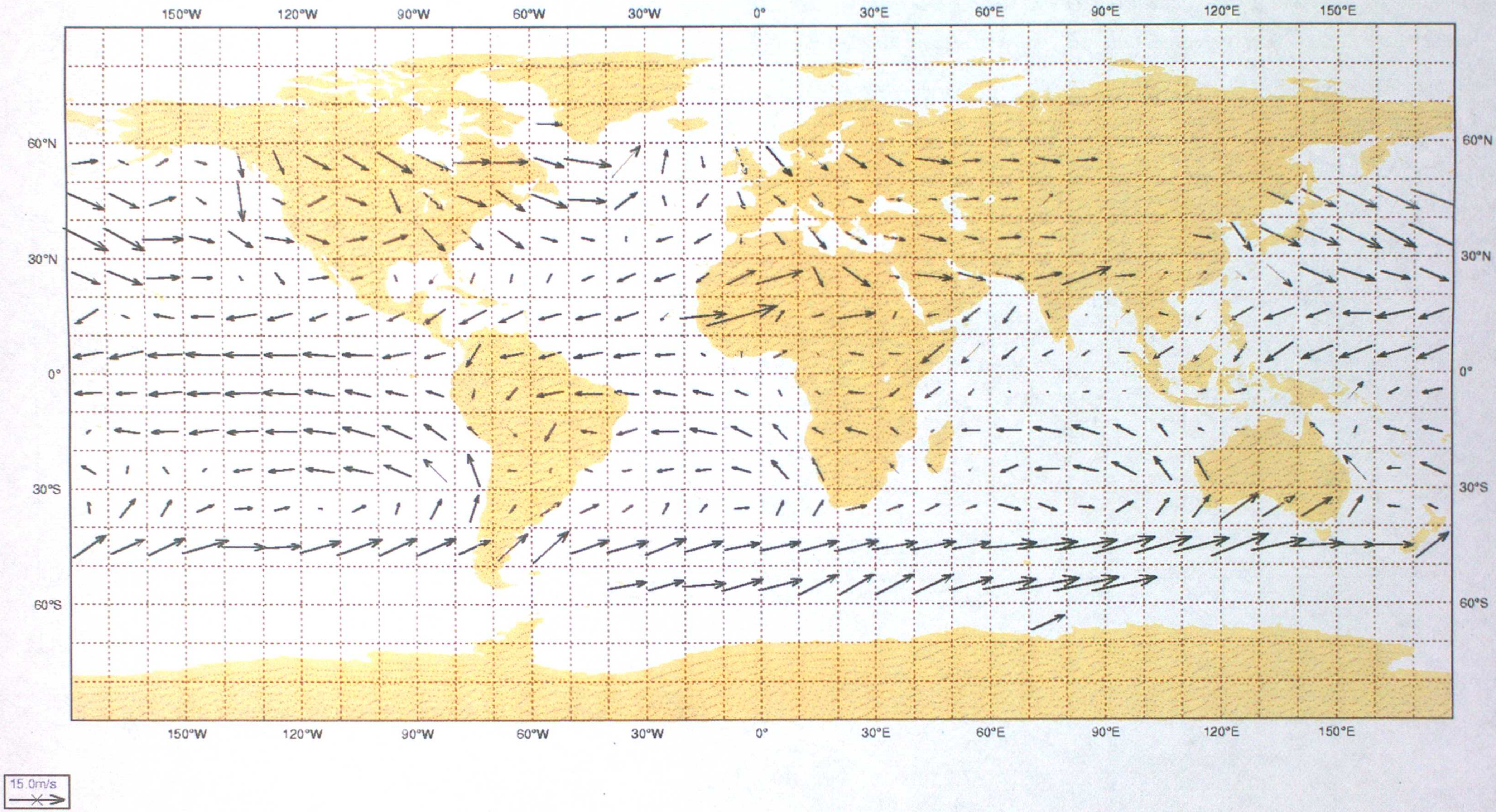

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 12. SATOB 701 - 1000 hPa mean vector wind differences. JANUARY 2005

All observations

Arrows are plotted where greater than 10 obs are present

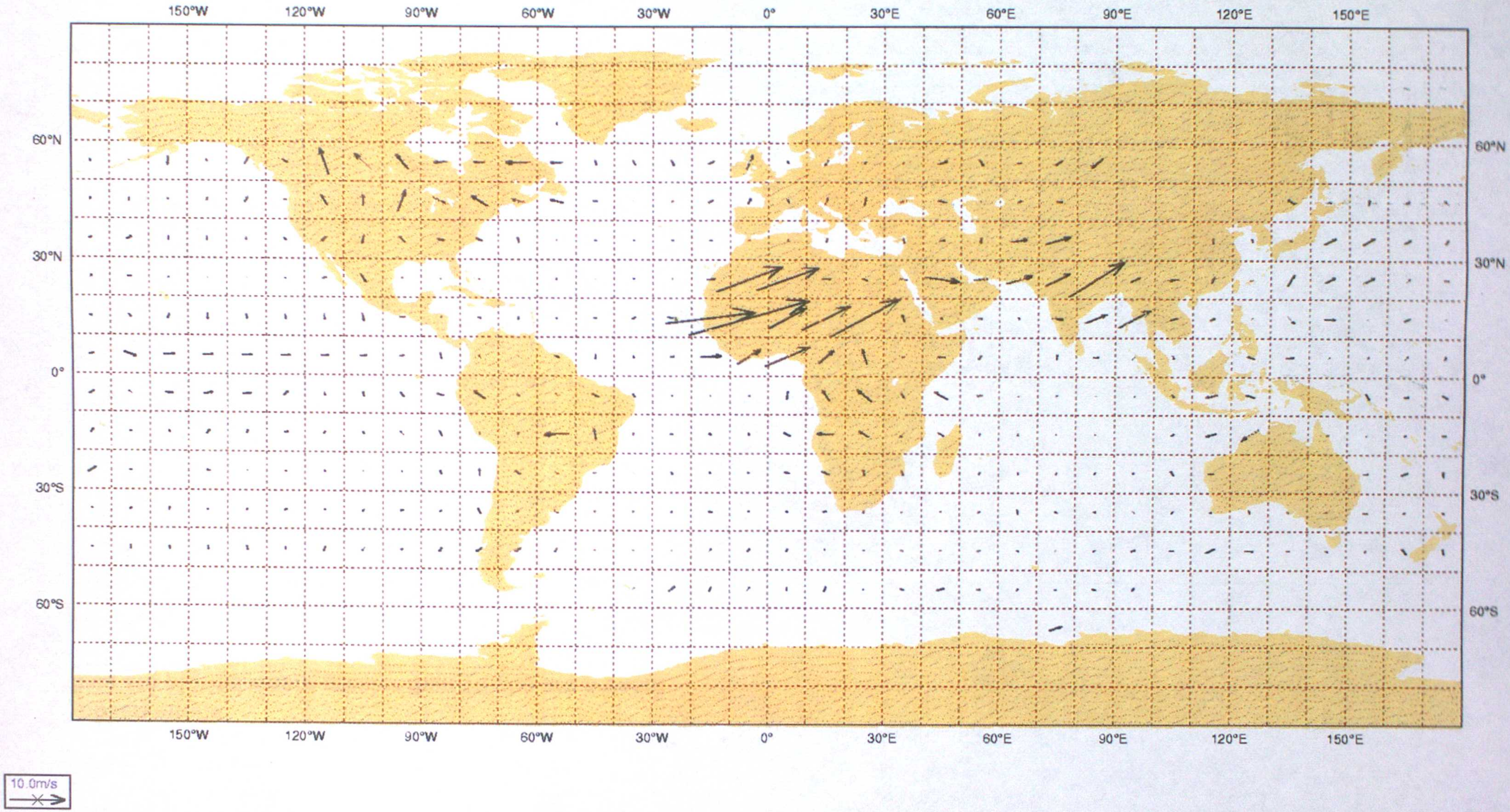

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 13. SATOB 701 - 1000 hPa mean O-B speed differences (ms-1). JANUARY 2005
All observations
Values are plotted where greater than 10 obs are present

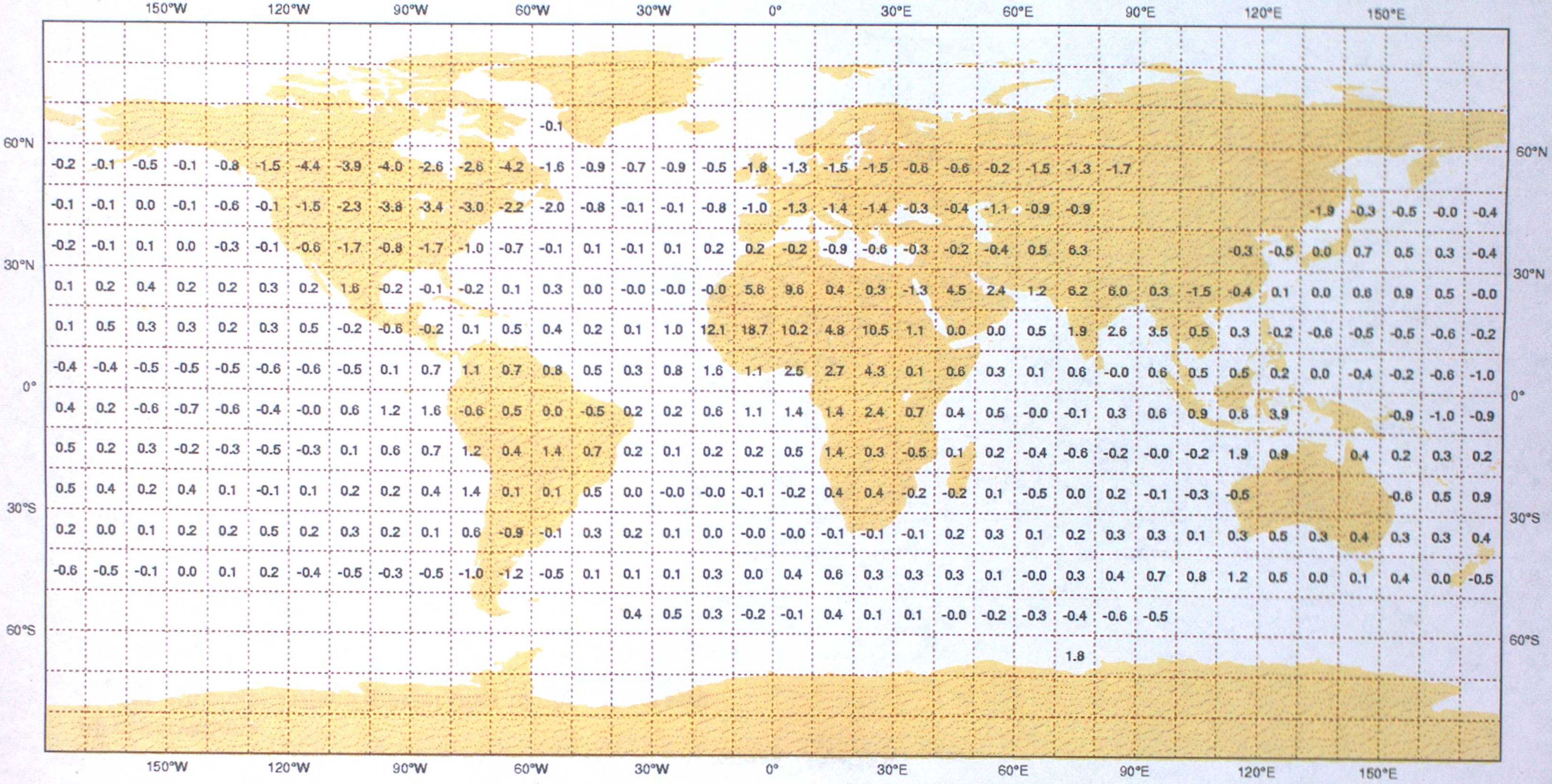

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-0.1
-0.2 -0.1 -0.5 -0.1 -0.8 -1.5 -4.4 -3.9 -4.0 -2.6 -2.6 -4.2 -1.6 -0.9 -0.7 -0.9 -0.5 -1.8 -1.3 -1.5 -1.5 -0.6 -0.6 -0.2 -1.5 -1.3 -1.7
-0.1 -0.1 0.0 -0.1 -0.6 -0.1 -1.5 -2.3 -3.8 -3.4 -3.0 -2.2 -2.0 -0.8 -0.1 -0.1 -0.8 -1.0 -1.3 -1.4 -1.4 -0.3 -0.4 -1.1 -0.9 -0.9 -1.9 -0.3 -0.5 -0.0 -0.4
-0.2 -0.1 0.1 0.0 -0.3 -0.1 -0.6 -1.7 -0.8 -1.7 -1.0 -0.7 -0.1 0.1 -0.1 0.1 0.2 0.2 -0.2 -0.9 -0.6 -0.3 -0.2 -0.4 0.5 6.3 -0.3 -0.5 0.0 0.7 0.5 0.3 -0.4
0.1 0.2 0.4 0.2 0.2 0.3 0.2 1.6 -0.2 -0.1 -0.2 0.1 0.3 0.0 -0.0 -0.0 -0.0 5.6 9.6 0.4 0.3 -1.3 4.5 2.4 1.2 6.2 6.0 0.3 -1.5 -0.4 0.1 0.0 0.6 0.9 0.5 -0.0
0.1 0.5 0.3 0.3 0.2 0.3 0.5 -0.2 -0.6 -0.2 0.1 0.5 0.4 0.2 0.1 1.0 12.1 18.7 10.2 4.8 10.5 1.1 0.0 0.0 0.5 1.9 2.6 3.5 0.5 0.3 -0.2 -0.6 -0.5 -0.5 -0.6 -0.2
-0.4 -0.4 -0.5 -0.5 -0.5 -0.6 -0.6 -0.5 0.1 0.7 1.1 0.7 0.8 0.5 0.3 0.8 1.6 1.1 2.5 2.7 4.3 0.1 0.6 0.3 0.1 0.6 -0.0 0.6 0.5 0.5 0.2 0.0 -0.4 -0.2 -0.6 -1.0
0.4 0.2 -0.6 -0.7 -0.6 -0.4 -0.0 0.6 1.2 1.6 -0.6 0.5 0.0 -0.5 0.2 0.2 0.6 1.1 1.4 1.4 2.4 0.7 0.4 0.5 -0.0 -0.1 0.3 0.6 0.9 0.6 3.9 -0.9 -1.0 -0.9
0.5 0.2 0.3 -0.2 -0.3 -0.5 -0.3 0.1 0.6 0.7 1.2 0.4 1.4 0.7 0.2 0.1 0.2 0.2 0.5 1.4 0.3 -0.5 0.1 0.2 -0.4 -0.6 -0.2 -0.0 -0.2 1.9 0.9 0.4 0.2 0.3 0.2
0.5 0.4 0.2 0.4 0.1 -0.1 0.1 0.2 0.2 0.4 1.4 0.1 0.1 0.5 0.0 -0.0 -0.0 -0.1 -0.2 0.4 0.4 -0.2 -0.2 0.1 -0.5 0.0 0.2 -0.1 -0.3 -0.5 -0.6 0.5 0.9
0.2 0.0 0.1 0.2 0.2 0.5 0.2 0.3 0.2 0.1 0.6 -0.9 -0.1 0.3 0.2 0.1 0.0 -0.0 -0.0 -0.1 -0.1 -0.1 0.2 0.3 0.1 0.2 0.3 0.3 0.1 0.3 0.5 0.3 0.4 0.3 0.3 0.4
-0.6 -0.5 -0.1 0.0 0.1 0.2 -0.4 -0.5 -0.3 -0.5 -1.0 -1.2 -0.5 0.1 0.1 0.1 0.3 0.0 0.4 0.6 0.3 0.3 0.3 0.1 -0.0 0.3 0.4 0.7 0.8 1.2 0.5 0.0 0.1 0.4 0.0 -0.5
0.4 0.5 0.3 -0.2 -0.1 0.4 0.1 0.1 -0.0 -0.2 -0.3 -0.4 -0.6 -0.5
1.8

Figure 14. SATOB 701 - 1000 hPa mean RMS O-B vector differences (ms-1). JANUARY 2005
All observations
Values are plotted where greater than 10 obs are present

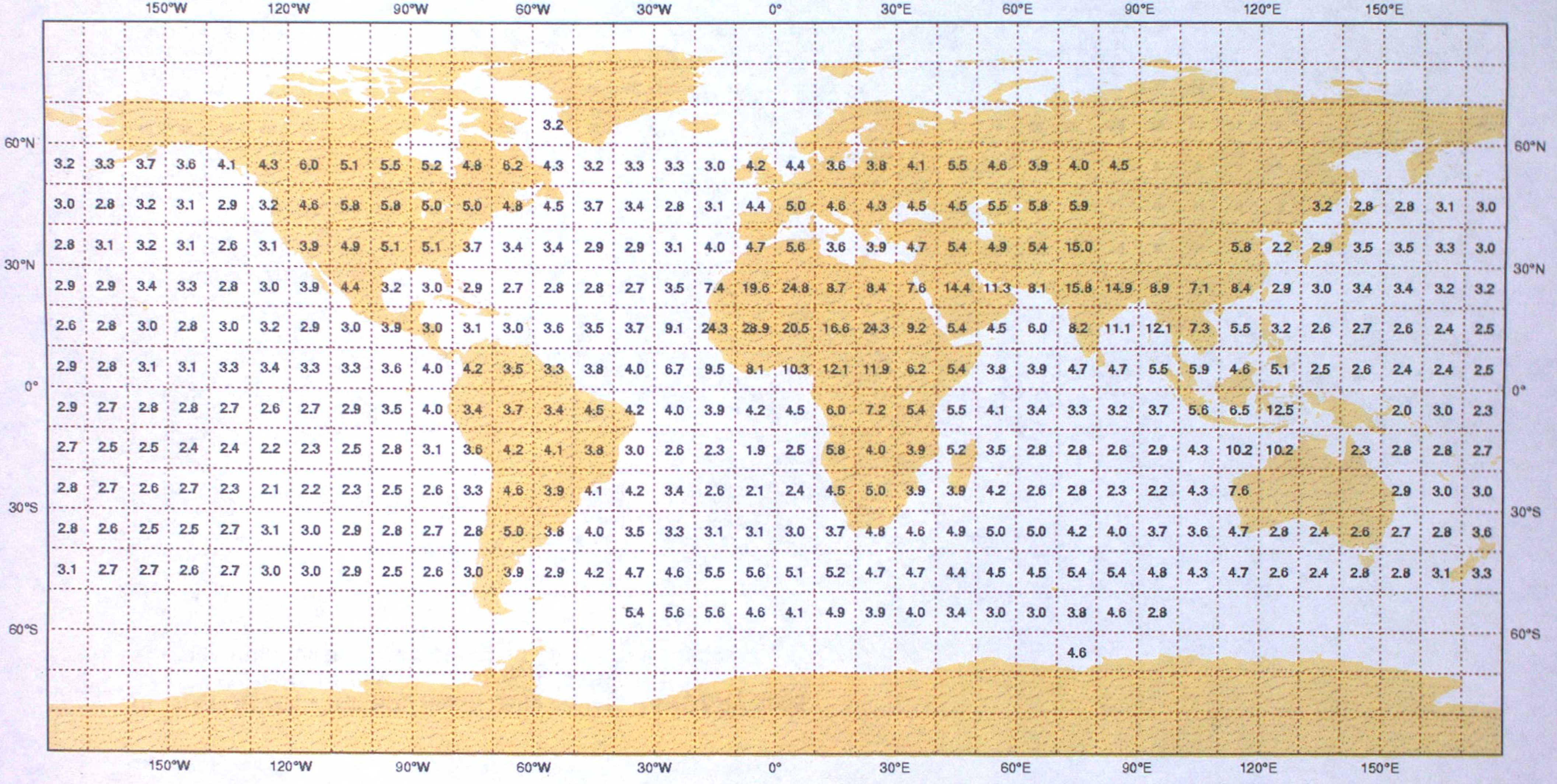

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
3.2
3.2 3.3 3.7 3.6 4.1 4.3 6.0 5.1 5.5 5.2 4.8 6.2 4.3 3.2 3.3 3.3 3.0 4.2 4.4 3.6 3.8 4.1 5.5 4.6 3.9 4.0 4.5
3.0 2.8 3.2 3.1 2.9 3.2 4.6 5.8 5.8 5.0 5.0 4.8 4.5 3.7 3.4 2.8 3.1 4.4 5.0 4.6 4.3 4.5 4.5 5.5 5.8 5.9 3.2 2.8 2.8 3.1 3.0
2.8 3.1 3.2 3.1 2.6 3.1 3.9 4.9 5.1 5.1 3.7 3.4 3.4 2.9 2.9 3.1 4.0 4.7 5.6 3.6 3.9 4.7 5.4 4.9 5.4 15.0 5.8 2.2 2.9 3.5 3.5 3.3 3.0
2.9 2.9 3.4 3.3 2.8 3.0 3.9 4.4 3.2 3.0 2.9 2.7 2.8 2.8 2.7 3.5 7.4 19.6 24.8 8.7 8.4 7.6 14.4 11.3 8.1 15.8 14.9 8.9 7.1 8.4 2.9 3.0 3.4 3.4 3.2 3.2
2.6 2.8 3.0 2.8 3.0 3.2 2.9 3.0 3.9 3.0 3.1 3.0 3.6 3.5 3.7 9.1 24.3 28.9 20.5 16.6 24.3 9.2 5.4 4.5 6.0 8.2 11.1 12.1 7.3 5.5 3.2 2.6 2.7 2.6 2.4 2.5
2.9 2.8 3.1 3.1 3.3 3.4 3.3 3.3 3.6 4.0 4.2 3.5 3.3 3.8 4.0 6.7 9.5 8.1 10.3 12.1 11.9 6.2 5.4 3.8 3.9 4.7 4.7 5.5 5.9 4.6 5.1 2.5 2.6 2.4 2.4 2.5
2.9 2.7 2.8 2.8 2.7 2.6 2.7 2.9 3.5 4.0 3.4 3.7 3.4 4.5 4.2 4.0 3.9 4.2 4.5 6.0 7.2 5.4 5.5 4.1 3.4 3.3 3.2 3.7 5.6 6.5 12.5 2.0 3.0 2.3
2.7 2.5 2.5 2.4 2.4 2.2 2.3 2.5 2.8 3.1 3.6 4.2 4.1 3.8 3.0 2.6 2.3 1.9 2.5 5.8 4.0 3.9 5.2 3.5 2.8 2.8 2.6 2.9 4.3 10.2 10.2 2.3 2.8 2.8 2.7
2.8 2.7 2.6 2.7 2.3 2.1 2.2 2.3 2.5 2.6 3.3 4.6 3.9 4.1 4.2 3.4 2.6 2.1 2.4 4.5 5.0 3.9 3.9 4.2 2.6 2.8 2.3 2.2 4.3 7.6 2.9 3.0 3.0
2.8 2.6 2.5 2.5 2.7 3.1 3.0 2.9 2.8 2.7 2.8 5.0 3.8 4.0 3.5 3.3 3.1 3.1 3.0 3.7 4.8 4.6 4.9 5.0 5.0 4.2 4.0 3.7 3.6 4.7 2.8 2.4 2.6 2.7 2.8 3.6
3.1 2.7 2.7 2.6 2.7 3.0 3.0 2.9 2.5 2.6 3.0 3.9 2.9 4.2 4.7 4.6 5.5 5.6 5.1 5.2 4.7 4.7 4.4 4.5 4.5 5.4 5.4 4.8 4.3 4.7 2.6 2.4 2.8 2.8 3.1 3.3
5.4 5.6 5.6 4.6 4.1 4.9 3.9 4.0 3.4 3.0 3.0 3.8 4.6 2.8
4.6

Figure 15. SATOB 401 - 700 hPa mean daily count. JANUARY 2005
Global average number of observations in 24 hours = 25904

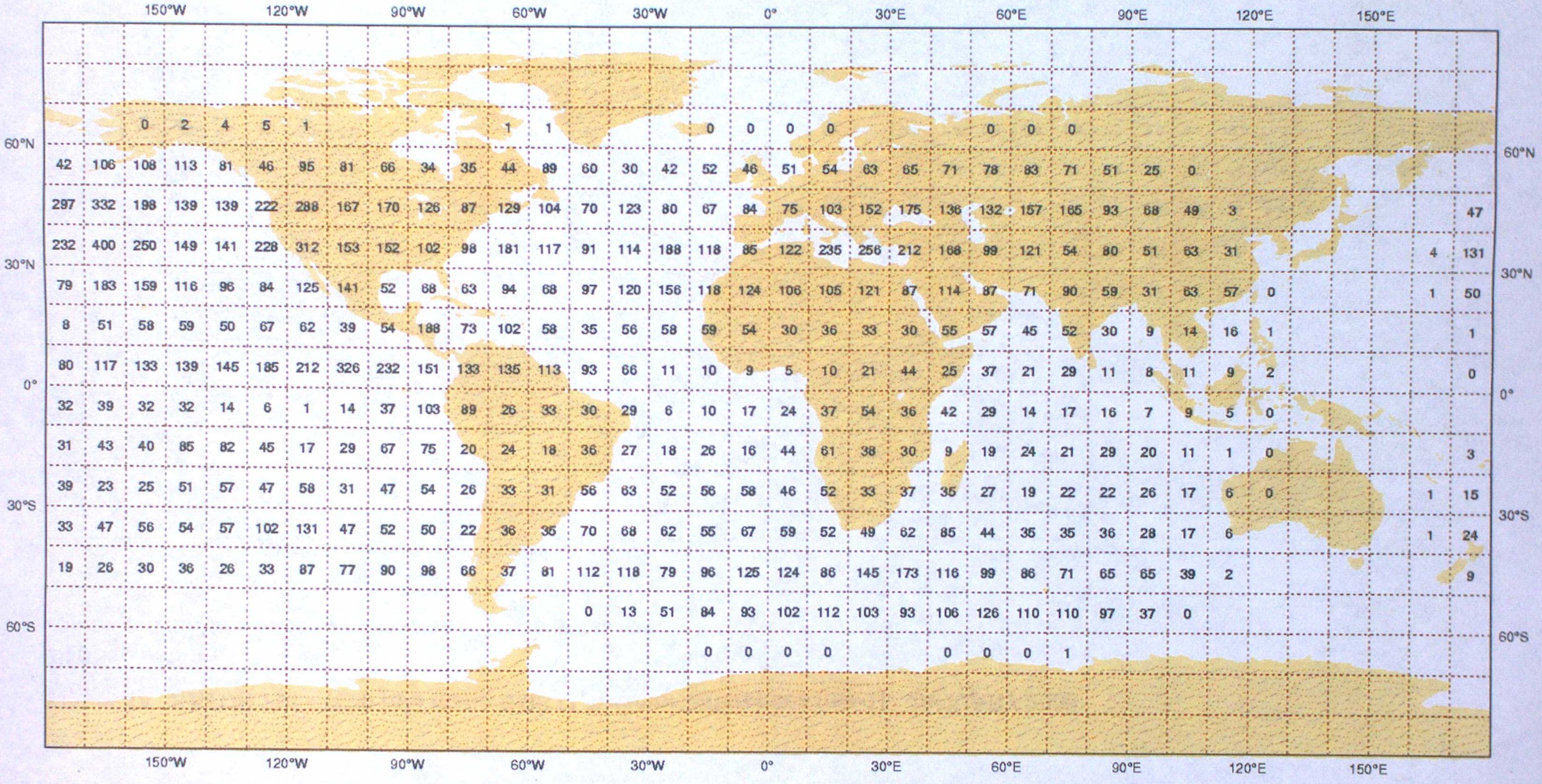

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
0 2 4 5 1 1 1 0 0 0 0 0 0 0
42 106 108 113 81 46 95 81 66 34 35 44 89 60 30 42 52 46 51 54 63 65 71 78 83 71 51 25 0
297 332 198 139 139 222 288 167 170 126 87 129 104 70 123 80 67 84 75 103 152 175 136 132 157 165 93 68 49 3 47
232 400 250 149 141 228 312 153 152 102 98 181 117 91 114 188 118 85 122 235 256 212 168 99 121 54 80 51 63 31 4 131
79 183 159 116 96 84 125 141 52 68 63 94 68 97 120 156 118 124 106 105 121 87 114 87 71 90 59 31 63 57 0 1 50
8 51 58 59 50 67 62 39 54 188 73 102 58 35 56 58 59 54 30 36 33 30 55 57 45 52 30 9 14 16 1 1
80 117 133 139 145 185 212 326 232 151 133 135 113 93 66 11 10 9 5 10 21 44 25 37 21 29 11 8 11 9 2 0
32 39 32 32 14 6 1 14 37 103 89 26 33 30 29 6 10 17 24 37 54 36 42 29 14 17 16 7 9 5 0
31 43 40 85 82 45 17 29 67 75 20 24 18 36 27 18 26 16 44 61 38 30 9 19 24 21 29 20 11 1 0 3
39 23 25 51 57 47 58 31 47 54 26 33 31 56 63 52 56 58 46 52 33 37 35 27 19 22 22 26 17 6 0 1 15
33 47 56 54 57 102 131 47 52 50 22 36 35 70 68 62 55 67 59 52 49 62 85 44 35 35 36 28 17 6 1 24
19 26 30 36 26 33 87 77 90 98 66 37 81 112 118 79 96 125 124 86 145 173 116 99 86 71 65 65 39 2 9
0 13 51 84 93 102 112 103 93 106 126 110 110 97 37 0
0 0 0 0 0 0 0 1

Figure 16. SATOB 401 - 700 hPa vector mean wind. JANUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

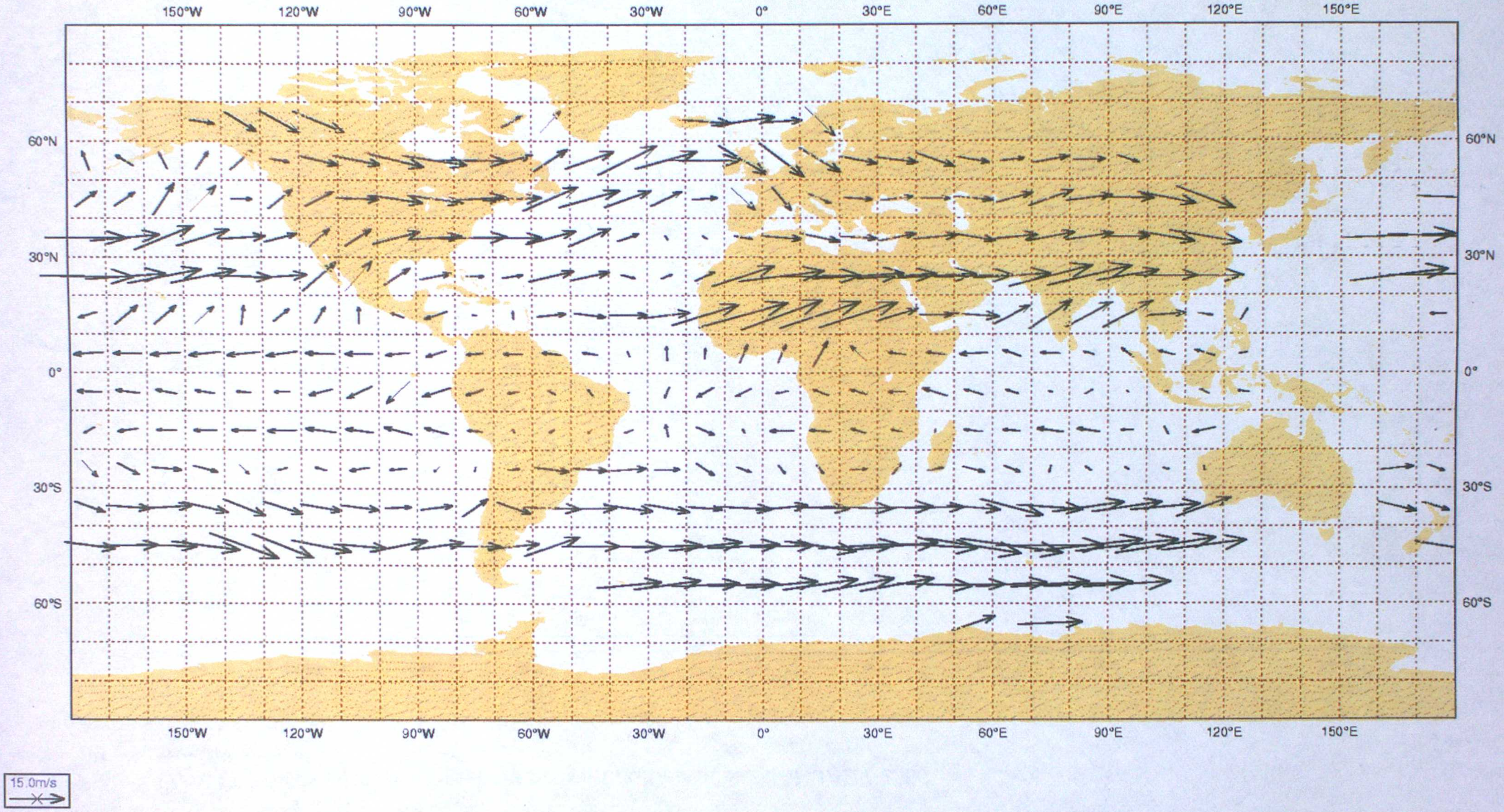

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 17. SATOB 401 - 700 hPa mean vector wind differences. JANUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

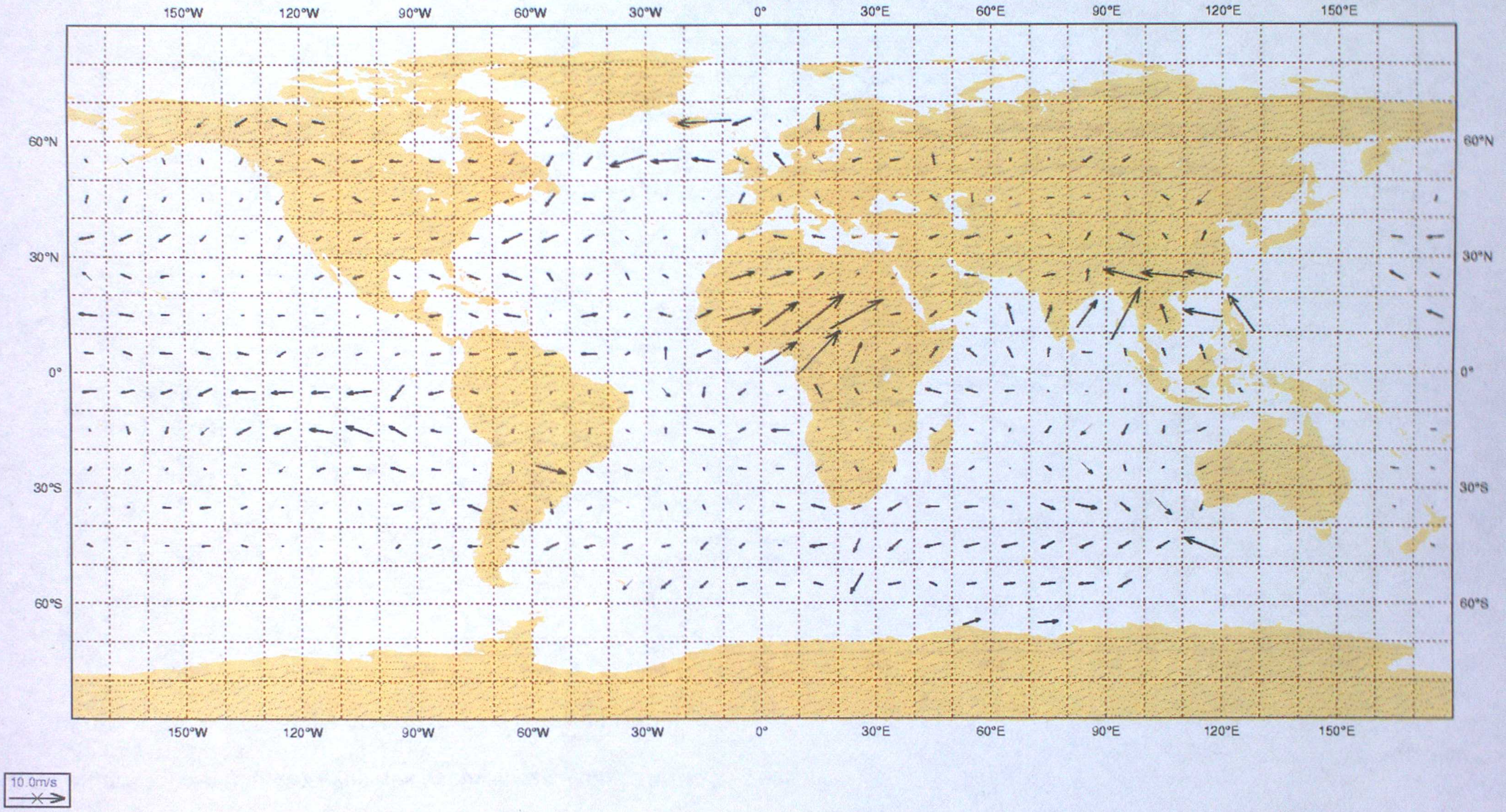

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 18. SATOB 401 - 700 hPa mean O-B speed differences (ms-1). JANUARY 2005
All observations
Values are plotted where greater than 10 obs are present

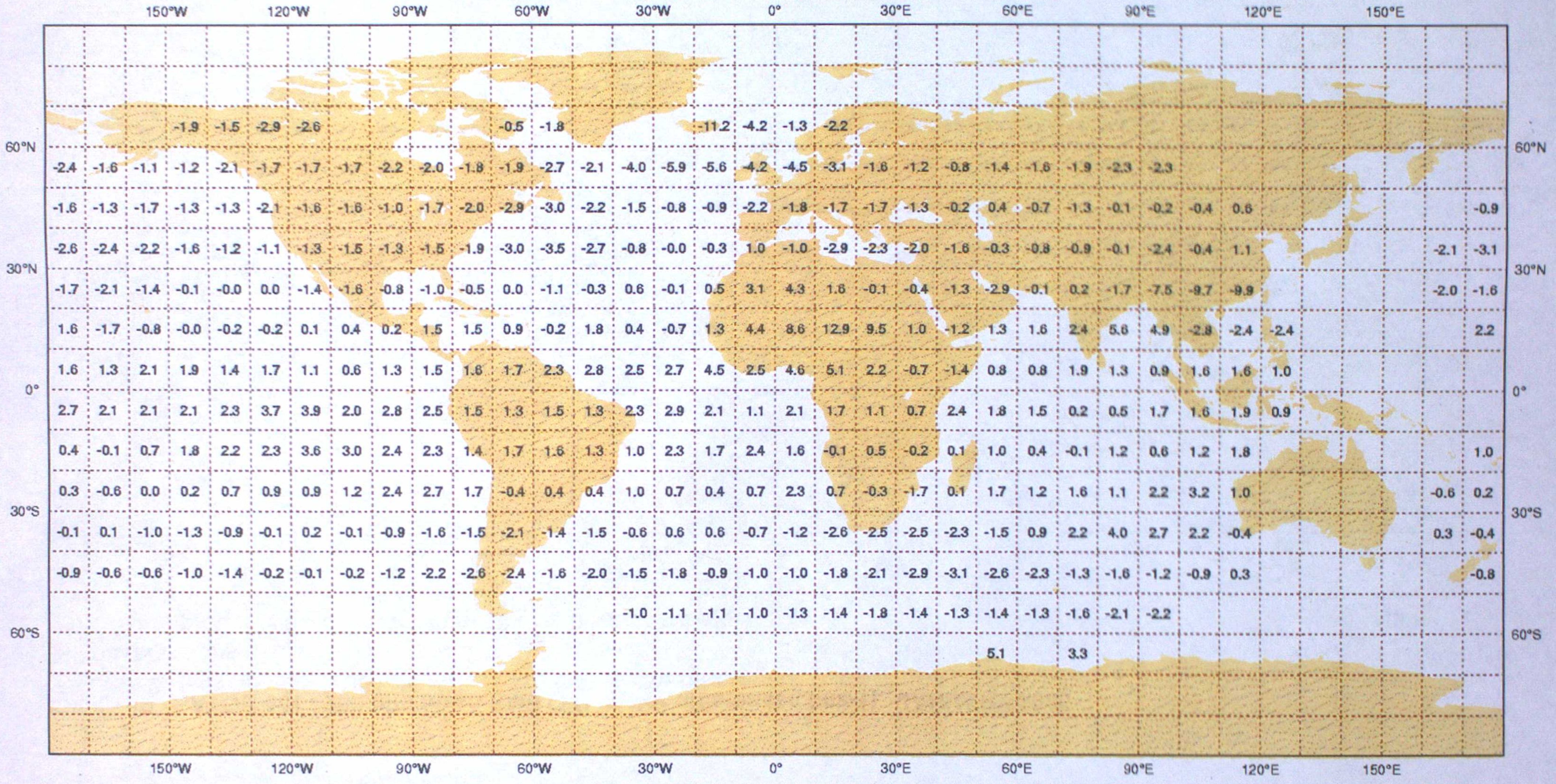

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
-1.9 -1.5 -2.9 -2.6 -0.5 -1.8 -11.2 -4.2 -1.3 -2.2
-2.4 -1.6 -1.1 -1.2 -2.1 -1.7 -1.7 -1.7 -2.2 -2.0 -1.8 -1.9 -2.7 -2.1 -4.0 -5.9 -5.6 -4.2 -4.5 -3.1 -1.6 -1.2 -0.8 -1.4 -1.6 -1.9 -2.3 -2.3
-1.6 -1.3 -1.7 -1.3 -1.3 -2.1 -1.6 -1.6 -1.0 -1.7 -2.0 -2.9 -3.0 -2.2 -1.5 -0.8 -0.9 -2.2 -1.8 -1.7 -1.7 -1.3 -0.2 0.4 -0.7 -1.3 -0.1 -0.2 -0.4 0.6 -0.9
-2.6 -2.4 -2.2 -1.6 -1.2 -1.1 -1.3 -1.5 -1.3 -1.5 -1.9 -3.0 -3.5 -2.7 -0.8 -0.0 -0.3 1.0 -1.0 -2.9 -2.3 -2.0 -1.6 -0.3 -0.8 -0.9 -0.1 -2.4 -0.4 1.1 -2.1 -3.1
-1.7 -2.1 -1.4 -0.1 -0.0 0.0 -1.4 -1.6 -0.8 -1.0 -0.5 0.0 -1.1 -0.3 0.6 -0.1 0.5 3.1 4.3 1.6 -0.1 -0.4 -1.3 -2.9 -0.1 0.2 -1.7 -7.5 -9.7 -9.9 -2.0 -1.6
1.6 -1.7 -0.8 -0.0 -0.2 -0.2 0.1 0.4 0.2 1.5 1.5 0.9 -0.2 1.8 0.4 -0.7 1.3 4.4 8.6 12.9 9.5 1.0 -1.2 1.3 1.6 2.4 5.6 4.9 -2.8 -2.4 -2.4 2.2
1.6 1.3 2.1 1.9 1.4 1.7 1.1 0.6 1.3 1.5 1.6 1.7 2.3 2.8 2.5 2.7 4.5 2.5 4.6 5.1 2.2 -0.7 -1.4 0.8 0.8 1.9 1.3 0.9 1.6 1.6 1.0
2.7 2.1 2.1 2.1 2.3 3.7 3.9 2.0 2.8 2.5 1.5 1.3 1.5 1.3 2.3 2.9 2.1 1.1 2.1 1.7 1.1 0.7 2.4 1.8 1.5 0.2 0.5 1.7 1.6 1.9 0.9
0.4 -0.1 0.7 1.8 2.2 2.3 3.6 3.0 2.4 2.3 1.4 1.7 1.6 1.3 1.0 2.3 1.7 2.4 1.6 -0.1 0.5 -0.2 0.1 1.0 0.4 -0.1 1.2 0.6 1.2 1.8 1.0
0.3 -0.6 0.0 0.2 0.7 0.9 0.9 1.2 2.4 2.7 1.7 -0.4 0.4 0.4 1.0 0.7 0.4 0.7 2.3 0.7 -0.3 -1.7 0.1 1.7 1.2 1.6 1.1 2.2 3.2 1.0 -0.6 0.2
-0.1 0.1 -1.0 -1.3 -0.9 -0.1 0.2 -0.1 -0.9 -1.6 -1.5 -2.1 -1.4 -1.5 -0.6 0.6 0.6 -0.7 -1.2 -2.6 -2.5 -2.5 -2.3 -1.5 0.9 2.2 4.0 2.7 2.2 -0.4 0.3 -0.4
-0.9 -0.6 -0.6 -1.0 -1.4 -0.2 -0.1 -0.2 -1.2 -2.2 -2.6 -2.4 -1.6 -2.0 -1.5 -1.8 -0.9 -1.0 -1.0 -1.8 -2.1 -2.9 -3.1 -2.6 -2.3 -1.3 -1.6 -1.2 -0.9 0.3 -0.8
-1.0 -1.1 -1.1 -1.0 -1.3 -1.4 -1.8 -1.4 -1.3 -1.4 -1.3 -1.6 -2.1 -2.2
5.1 3.3

Figure 19. SATOB 401 - 700 hPa mean RMS O-B vector differences (ms-1). JANUARY 2005
All observations
Values are plotted where greater than 10 obs are present

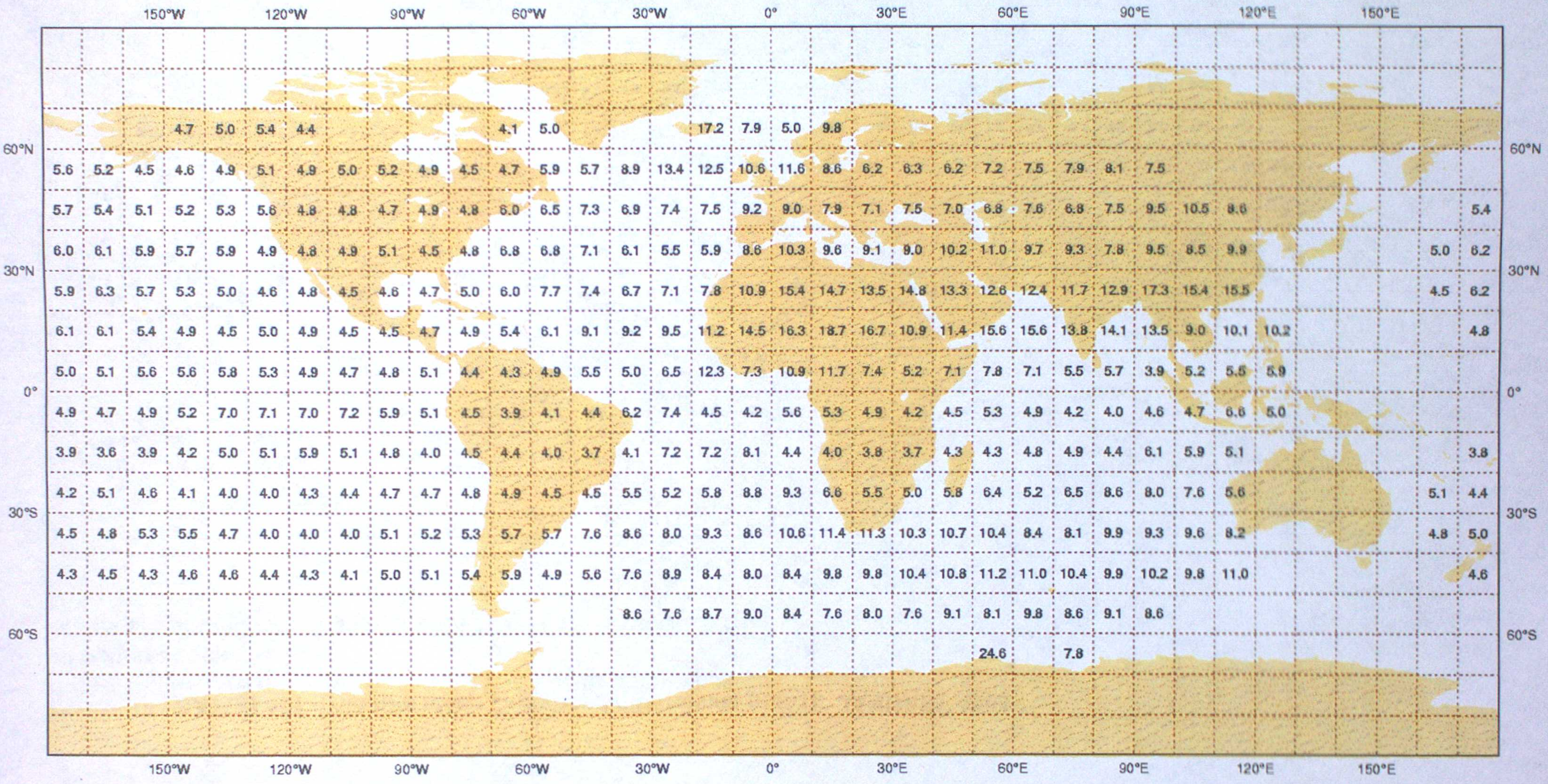
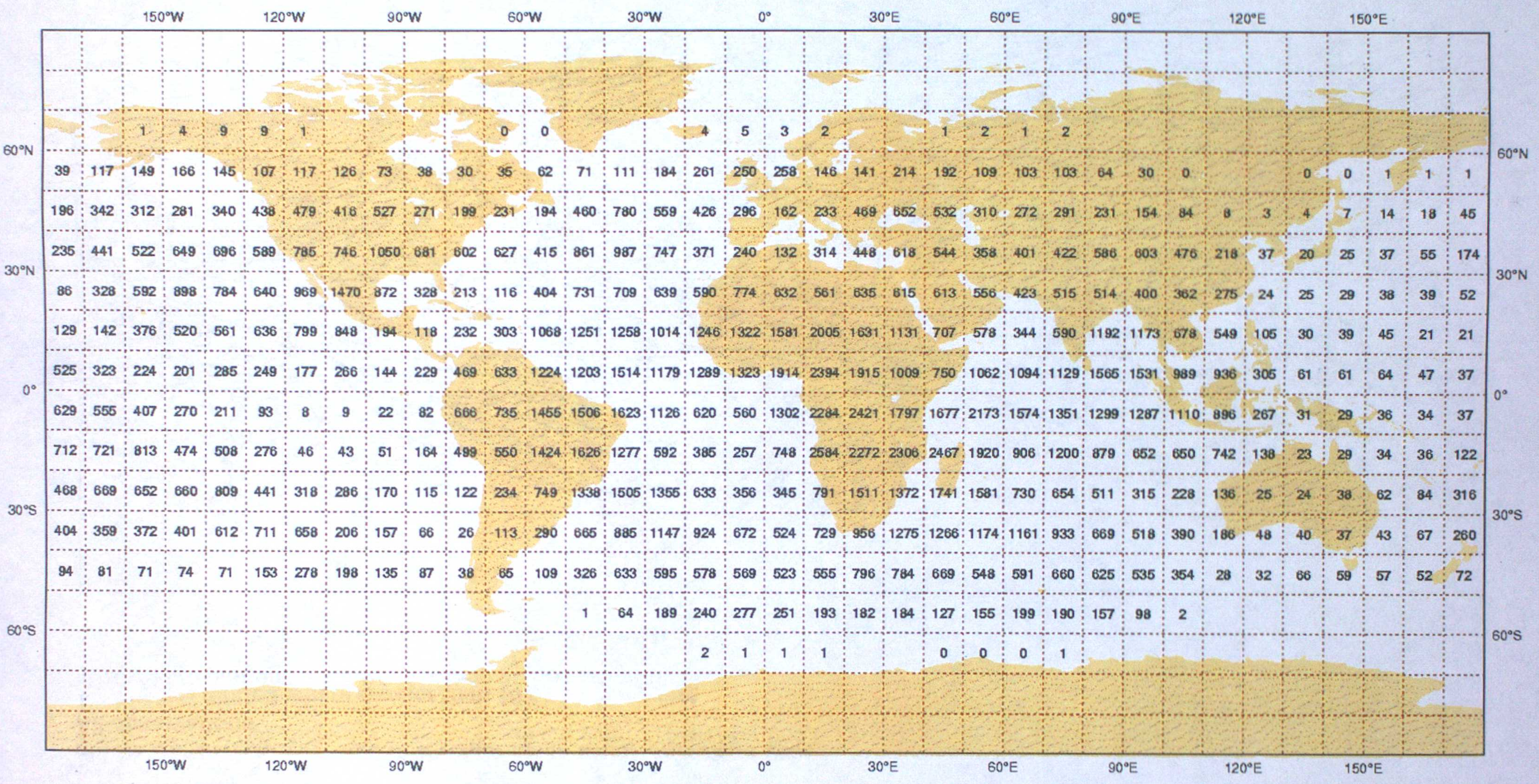

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N
30°N
0°
30°S
60°S
4.7 5.0 5.4 4.4 4.1 5.0 17.2 7.9 5.0 9.8
5.6 5.2 4.5 4.6 4.9 5.1 4.9 5.0 5.2 4.9 4.5 4.7 5.9 5.7 8.9 13.4 12.5 10.6 11.6 8.6 6.2 6.3 6.2 7.2 7.5 7.9 8.1 7.5
5.7 5.4 5.1 5.2 5.3 5.6 4.8 4.8 4.7 4.9 4.8 6.0 6.5 7.3 6.9 7.4 7.5 9.2 9.0 7.9 7.1 7.5 7.0 6.8 7.6 6.8 7.5 9.5 10.5 8.6 5.4
6.0 6.1 5.9 5.7 5.9 4.9 4.8 4.9 5.1 4.5 4.8 6.8 6.8 7.1 6.1 5.5 5.9 8.6 10.3 9.6 9.1 9.0 10.2 11.0 9.7 9.3 7.8 9.5 8.5 9.9 5.0 6.2
5.9 6.3 5.7 5.3 5.0 4.6 4.8 4.5 4.6 4.7 5.0 6.0 7.7 7.4 6.7 7.1 7.8 10.9 15.4 14.7 13.5 14.8 13.3 12.6 12.4 11.7 12.9 17.3 15.4 15.5 4.5 6.2
6.1 6.1 5.4 4.9 4.5 5.0 4.9 4.5 4.5 4.7 4.9 5.4 6.1 9.1 9.2 9.5 11.2 14.5 16.3 18.7 16.7 10.9 11.4 15.6 15.6 13.8 14.1 13.5 9.0 10.1 10.2 4.8
5.0 5.1 5.6 5.6 5.8 5.3 4.9 4.7 4.8 5.1 4.4 4.3 4.9 5.5 5.0 6.5 12.3 7.3 10.9 11.7 7.4 5.2 7.1 7.8 7.1 5.5 5.7 3.9 5.2 5.5 5.9
4.9 4.7 4.9 5.2 7.0 7.1 7.0 7.2 5.9 5.1 4.5 3.9 4.1 4.4 6.2 7.4 4.5 4.2 5.6 5.3 4.9 4.2 4.5 5.3 4.9 4.2 4.0 4.6 4.7 6.6 5.0
3.9 3.6 3.9 4.2 5.0 5.1 5.9 5.1 4.8 4.0 4.5 4.4 4.0 3.7 4.1 7.2 7.2 8.1 4.4 4.0 3.8 3.7 4.3 4.3 4.8 4.9 4.4 6.1 5.9 5.1 3.8
4.2 5.1 4.6 4.1 4.0 4.0 4.3 4.4 4.7 4.7 4.8 4.9 4.5 4.5 5.5 5.2 5.8 8.8 9.3 6.6 5.5 5.0 5.8 6.4 5.2 6.5 8.6 8.0 7.6 5.6 5.1 4.4
4.5 4.8 5.3 5.5 4.7 4.0 4.0 4.0 5.1 5.2 5.3 5.7 5.7 7.6 8.6 8.0 9.3 8.6 10.6 11.4 11.3 10.3 10.7 10.4 8.4 8.1 9.9 9.3 9.6 8.2 4.8 5.0
4.3 4.5 4.3 4.6 4.6 4.4 4.3 4.1 5.0 5.1 5.4 5.9 4.9 5.6 7.6 8.9 8.4 8.0 8.4 9.8 9.8 10.4 10.8 11.2 11.0 10.4 9.9 10.2 9.8 11.0 4.6
8.6 7.6 8.7 9.0 8.4 7.6 8.0 7.6 9.1 8.1 9.8 8.6 9.1 8.6
24.6 7.8

Figure 20. SATOB 101 - 400 hPa mean daily count. JANUARY 2005
Global average number of observations in 24 hours = 212916



		1	4	9	9	1					0	0				4	5	3	2			1	2	1	2										
39	117	149	166	145	107	117	126	73	38	30	35	62	71	111	184	261	250	258	146	141	214	192	109	103	103	64	30	0			0	0	1	1	1
196	342	312	281	340	438	479	416	527	271	199	231	194	460	780	559	426	296	162	233	469	652	532	310	272	291	231	154	84	8	3	4	7	14	18	45
235	441	522	649	696	589	785	746	1050	681	602	627	415	861	987	747	371	240	132	314	448	618	544	358	401	422	586	603	476	218	37	20	25	37	55	174
86	328	592	898	784	640	969	1470	872	328	213	116	404	731	709	639	590	774	632	561	635	615	613	556	423	515	514	400	362	275	24	25	29	38	39	52
129	142	376	520	561	636	799	848	194	118	232	303	1068	1251	1258	1014	1246	1322	1581	2005	1631	1131	707	578	344	590	1192	1173	678	549	105	30	39	45	21	21
525	323	224	201	285	249	177	266	144	229	469	633	1224	1203	1514	1179	1289	1323	1914	2394	1915	1009	750	1062	1094	1129	1565	1531	989	936	305	61	61	64	47	37
629	555	407	270	211	93	8	9	22	82	666	735	1455	1506	1623	1126	620	560	1302	2284	2421	1797	1677	2173	1574	1351	1299	1287	1110	896	267	31	29	36	34	37
712	721	813	474	508	276	46	43	51	164	499	550	1424	1626	1277	592	385	257	748	2584	2272	2306	2467	1920	906	1200	879	652	650	742	138	23	29	34	36	122
468	669	652	660	809	441	318	286	170	115	122	234	749	1338	1505	1355	633	356	345	791	1511	1372	1741	1581	730	654	511	315	228	136	25	24	38	62	84	316
404	359	372	401	612	711	658	206	157	66	26	113	290	665	885	1147	924	672	524	729	956	1275	1266	1174	1161	933	669	518	390	186	48	40	37	43	67	260
94	81	71	74	71	153	278	198	135	87	38	65	109	326	633	595	578	569	523	555	796	784	669	548	591	660	625	535	354	28	32	66	59	57	52	72
													1	64	189	240	277	251	193	182	184	127	155	199	190	157	98	2							
																2	1	1	1			0	0	0	1										

Figure 21. SATOB 101 - 400 hPa vector mean wind. JANUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

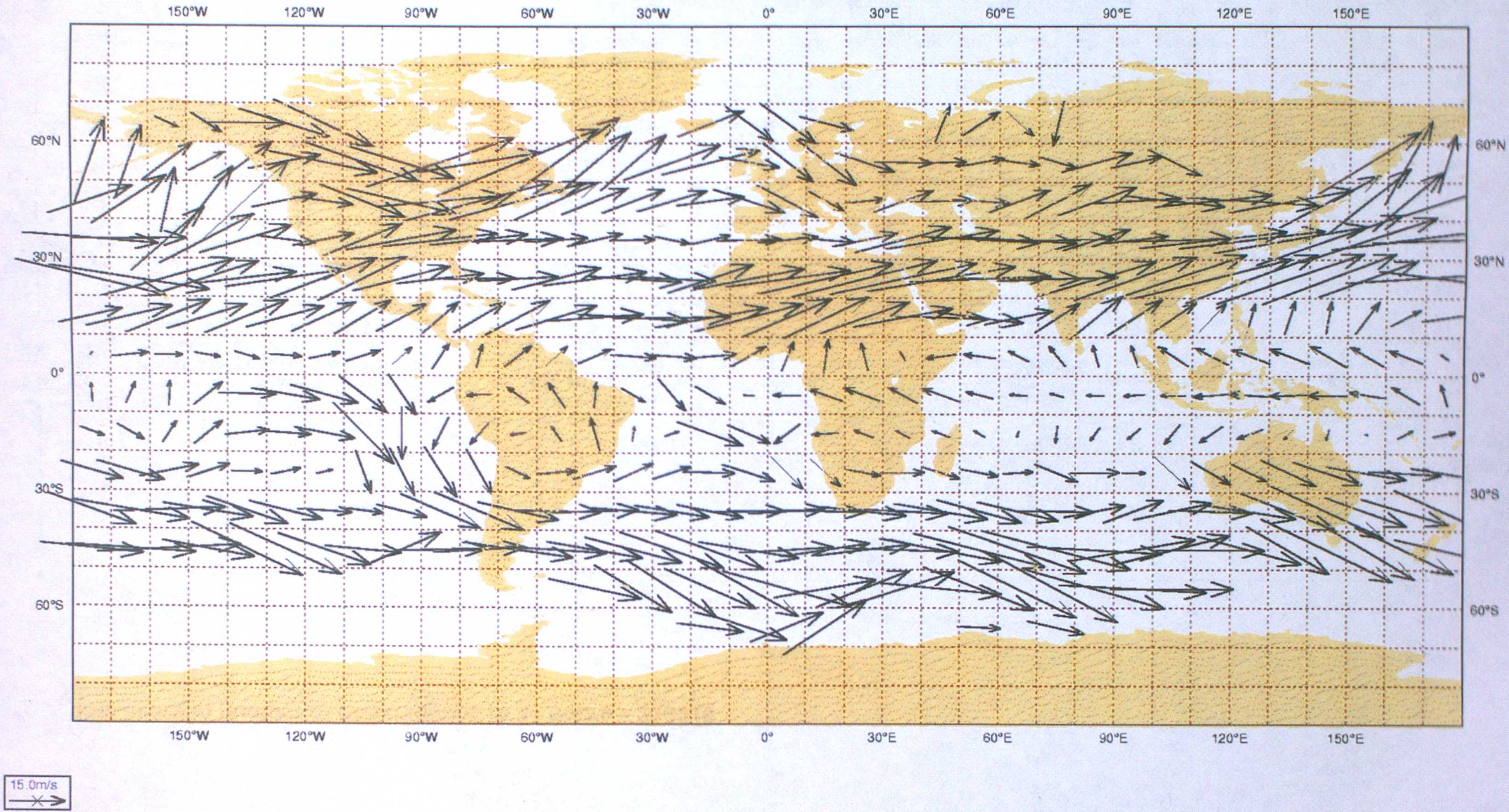

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
15.0m/s

Figure 22. SATOB 101 - 400 hPa mean vector wind differences. JANUARY 2005
All observations
Arrows are plotted where greater than 10 obs are present

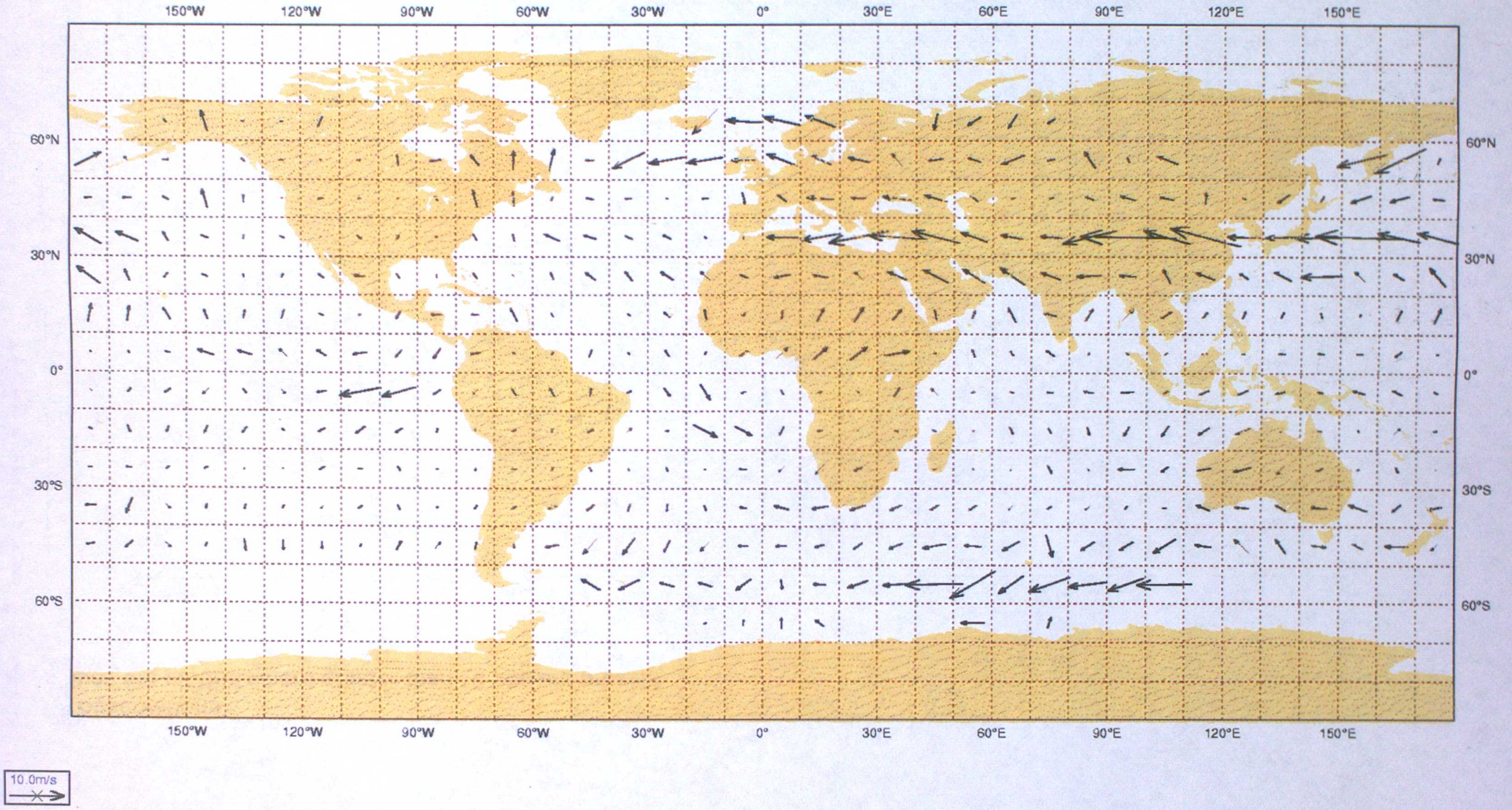

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
10.0m/s

Figure 23. SATOB 101 - 400 hPa mean O-B speed differences (ms-1). JANUARY 2005
All observations
Values are plotted where greater than 10 obs are present

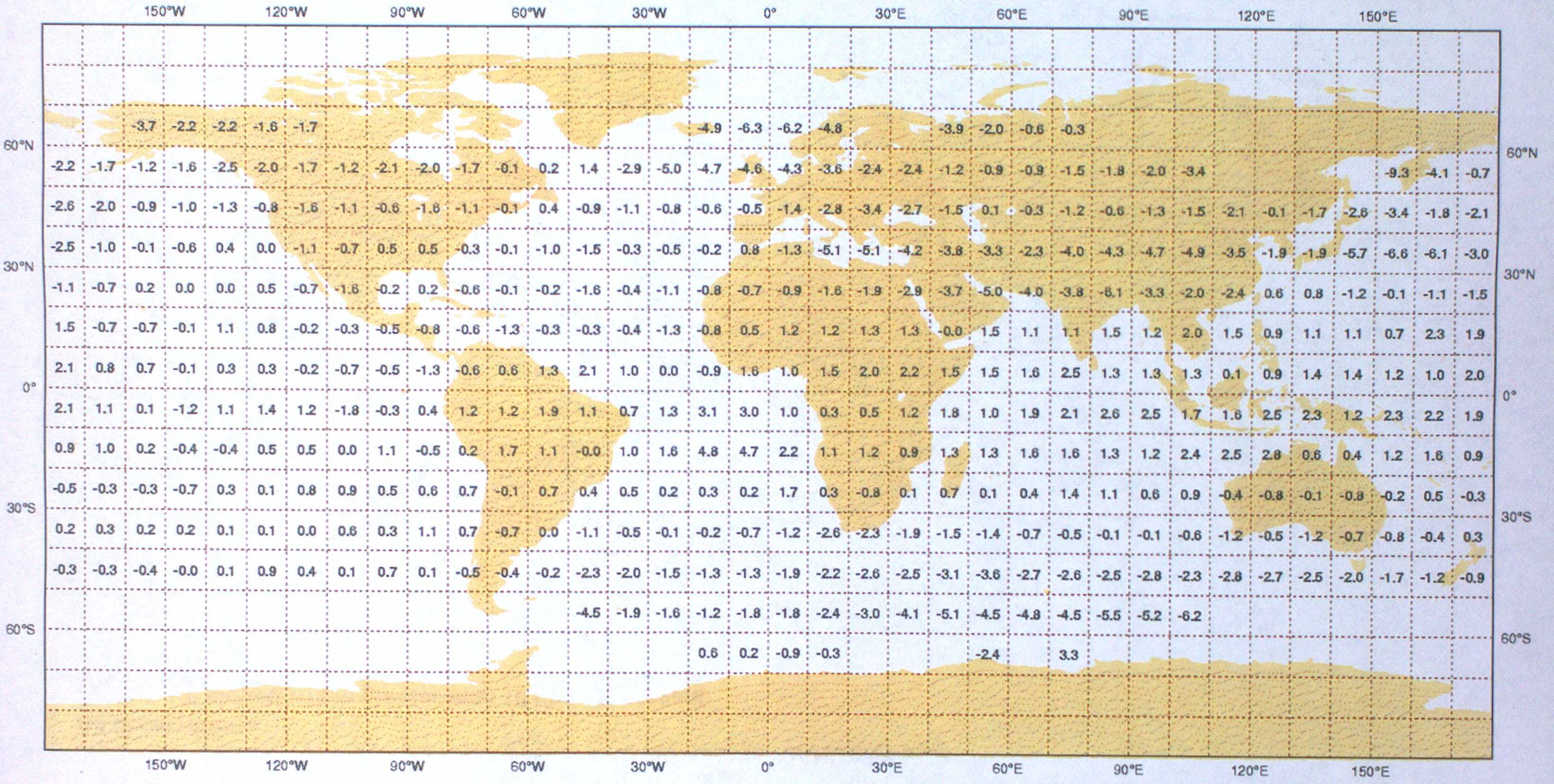
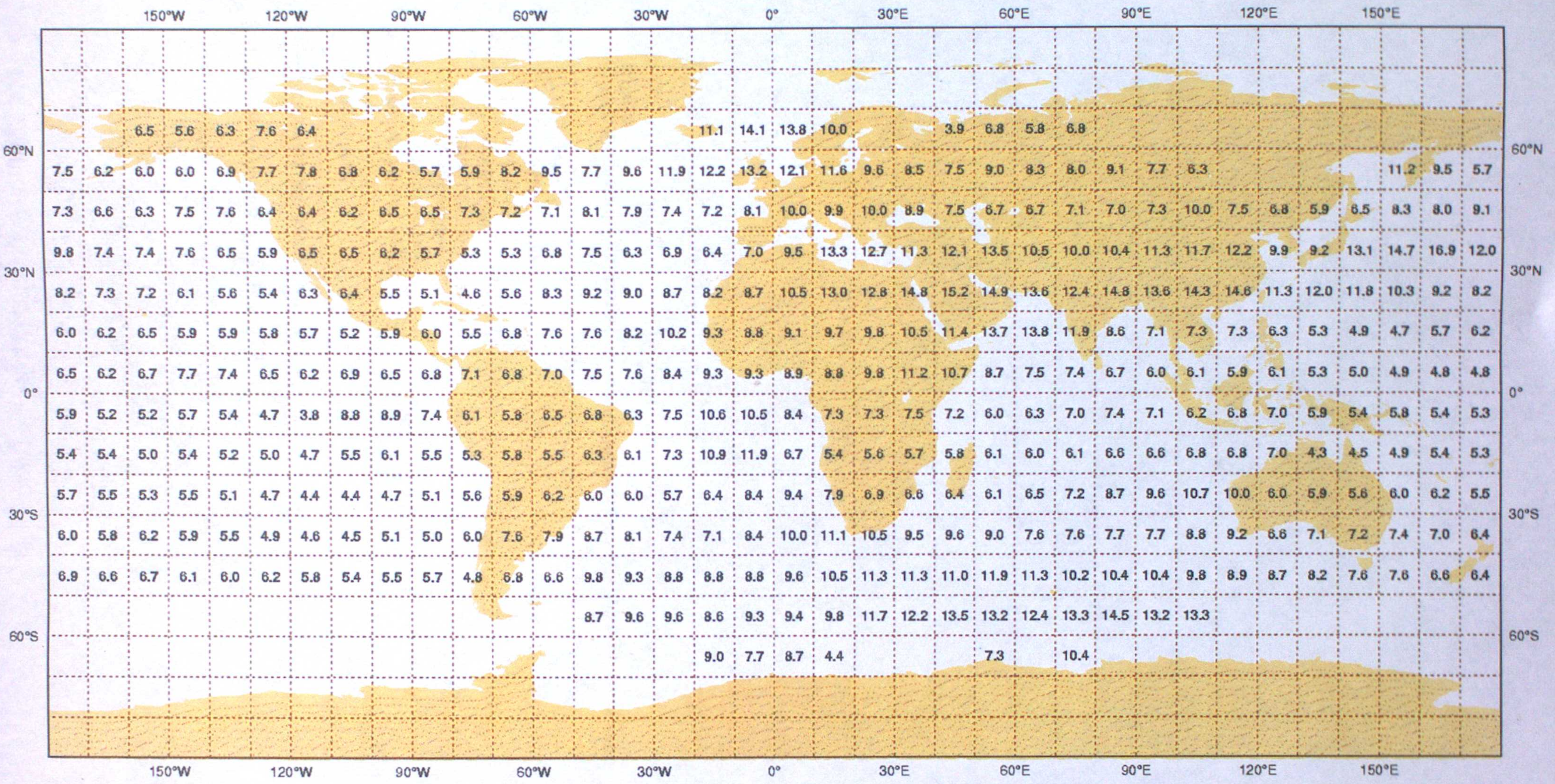

150°W
120°W
90°W
60°W
30°W
0°
30°E
60°E
90°E
120°E
150°E
60°N
30°N
0°
30°S
60°S
-3.7 -2.2 -2.2 -1.6 -1.7 -4.9 -6.3 -6.2 -4.8 -3.9 -2.0 -0.6 -0.3
-2.2 -1.7 -1.2 -1.6 -2.5 -2.0 -1.7 -1.2 -2.1 -2.0 -1.7 -0.1 0.2 1.4 -2.9 -5.0 -4.7 -4.6 -4.3 -3.6 -2.4 -2.4 -1.2 -0.9 -0.9 -1.5 -1.8 -2.0 -3.4 -9.3 -4.1 -0.7
-2.6 -2.0 -0.9 -1.0 -1.3 -0.8 -1.6 -1.1 -0.6 -1.6 -1.1 -0.1 0.4 -0.9 -1.1 -0.8 -0.6 -0.5 -1.4 -2.8 -3.4 -2.7 -1.5 0.1 -0.3 -1.2 -0.6 -1.3 -1.5 -2.1 -0.1 -1.7 -2.6 -3.4 -1.8 -2.1
-2.5 -1.0 -0.1 -0.6 0.4 0.0 -1.1 -0.7 0.5 0.5 -0.3 -0.1 -1.0 -1.5 -0.3 -0.5 -0.2 0.8 -1.3 -5.1 -5.1 -4.2 -3.8 -3.3 -2.3 -4.0 -4.3 -4.7 -4.9 -3.5 -1.9 -1.9 -5.7 -6.6 -6.1 -3.0
-1.1 -0.7 0.2 0.0 0.0 0.5 -0.7 -1.6 -0.2 0.2 -0.6 -0.1 -0.2 -1.6 -0.4 -1.1 -0.8 -0.7 -0.9 -1.6 -1.9 -2.9 -3.7 -5.0 -4.0 -3.8 -6.1 -3.3 -2.0 -2.4 0.6 0.8 -1.2 -0.1 -1.1 -1.5
1.5 -0.7 -0.7 -0.1 1.1 0.8 -0.2 -0.3 -0.5 -0.8 -0.6 -1.3 -0.3 -0.3 -0.4 -1.3 -0.8 0.5 1.2 1.2 1.3 1.3 -0.0 1.5 1.1 1.1 1.5 1.2 2.0 1.5 0.9 1.1 1.1 0.7 2.3 1.9
2.1 0.8 0.7 -0.1 0.3 0.3 -0.2 -0.7 -0.5 -1.3 -0.6 0.6 1.3 2.1 1.0 0.0 -0.9 1.6 1.0 1.5 2.0 2.2 1.5 1.5 1.6 2.5 1.3 1.3 1.3 0.1 0.9 1.4 1.4 1.2 1.0 2.0
2.1 1.1 0.1 -1.2 1.1 1.4 1.2 -1.8 -0.3 0.4 1.2 1.2 1.9 1.1 0.7 1.3 3.1 3.0 1.0 0.3 0.5 1.2 1.8 1.0 1.9 2.1 2.6 2.5 1.7 1.6 2.5 2.3 1.2 2.3 2.2 1.9
0.9 1.0 0.2 -0.4 -0.4 0.5 0.5 0.0 1.1 -0.5 0.2 1.7 1.1 -0.0 1.0 1.6 4.8 4.7 2.2 1.1 1.2 0.9 1.3 1.3 1.6 1.6 1.3 1.2 2.4 2.5 2.8 0.6 0.4 1.2 1.6 0.9
-0.5 -0.3 -0.3 -0.7 0.3 0.1 0.8 0.9 0.5 0.6 0.7 -0.1 0.7 0.4 0.5 0.2 0.3 0.2 1.7 0.3 -0.8 0.1 0.7 0.1 0.4 1.4 1.1 0.6 0.9 -0.4 -0.8 -0.1 -0.8 -0.2 0.5 -0.3
0.2 0.3 0.2 0.2 0.1 0.1 0.0 0.6 0.3 1.1 0.7 -0.7 0.0 -1.1 -0.5 -0.1 -0.2 -0.7 -1.2 -2.6 -2.3 -1.9 -1.5 -1.4 -0.7 -0.5 -0.1 -0.1 -0.6 -1.2 -0.5 -1.2 -0.7 -0.8 -0.4 0.3
-0.3 -0.3 -0.4 -0.0 0.1 0.9 0.4 0.1 0.7 0.1 -0.5 -0.4 -0.2 -2.3 -2.0 -1.5 -1.3 -1.3 -1.9 -2.2 -2.6 -2.5 -3.1 -3.6 -2.7 -2.6 -2.5 -2.8 -2.3 -2.8 -2.7 -2.5 -2.0 -1.7 -1.2 -0.9
-4.5 -1.9 -1.6 -1.2 -1.8 -1.8 -2.4 -3.0 -4.1 -5.1 -4.5 -4.8 -4.5 -5.5 -5.2 -6.2
0.6 0.2 -0.9 -0.3 -2.4 3.3

Figure 24. SATOB 101 - 400 hPa mean RMS O-B vector differences (ms-1). JANUARY 2005
All observations
Values are plotted where greater than 10 obs are present



		6.5	5.6	6.3	7.6	6.4										11.1	14.1	13.8	10.0			3.9	6.8	5.8	6.8										
7.5	6.2	6.0	6.0	6.9	7.7	7.8	6.8	6.2	5.7	5.9	8.2	9.5	7.7	9.6	11.9	12.2	13.2	12.1	11.6	9.6	8.5	7.5	9.0	8.3	8.0	9.1	7.7	6.3					11.2	9.5	5.7
7.3	6.6	6.3	7.5	7.6	6.4	6.4	6.2	6.5	6.5	7.3	7.2	7.1	8.1	7.9	7.4	7.2	8.1	10.0	9.9	10.0	8.9	7.5	6.7	6.7	7.1	7.0	7.3	10.0	7.5	6.8	5.9	6.5	8.3	8.0	9.1
9.8	7.4	7.4	7.6	6.5	5.9	6.5	6.5	6.2	5.7	5.3	5.3	6.8	7.5	6.3	6.9	6.4	7.0	9.5	13.3	12.7	11.3	12.1	13.5	10.5	10.0	10.4	11.3	11.7	12.2	9.9	9.2	13.1	14.7	16.9	12.0
8.2	7.3	7.2	6.1	5.6	5.4	6.3	6.4	5.5	5.1	4.6	5.6	8.3	9.2	9.0	8.7	8.2	8.7	10.5	13.0	12.8	14.8	15.2	14.9	13.6	12.4	14.8	13.6	14.3	14.6	11.3	12.0	11.8	10.3	9.2	8.2
6.0	6.2	6.5	5.9	5.9	5.8	5.7	5.2	5.9	6.0	5.5	6.8	7.6	7.6	8.2	10.2	9.3	8.8	9.1	9.7	9.8	10.5	11.4	13.7	13.8	11.9	8.6	7.1	7.3	7.3	6.3	5.3	4.9	4.7	5.7	6.2
6.5	6.2	6.7	7.7	7.4	6.5	6.2	6.9	6.5	6.8	7.1	6.8	7.0	7.5	7.6	8.4	9.3	9.3	8.9	8.8	9.8	11.2	10.7	8.7	7.5	7.4	6.7	6.0	6.1	5.9	6.1	5.3	5.0	4.9	4.8	4.8
5.9	5.2	5.2	5.7	5.4	4.7	3.8	8.8	8.9	7.4	6.1	5.8	6.5	6.8	6.3	7.5	10.6	10.5	8.4	7.3	7.3	7.5	7.2	6.0	6.3	7.0	7.4	7.1	6.2	6.8	7.0	5.9	5.4	5.8	5.4	5.3
5.4	5.4	5.0	5.4	5.2	5.0	4.7	5.5	6.1	5.5	5.3	5.8	5.5	6.3	6.1	7.3	10.9	11.9	6.7	5.4	5.6	5.7	5.8	6.1	6.0	6.1	6.6	6.6	6.8	6.8	7.0	4.3	4.5	4.9	5.4	5.3
5.7	5.5	5.3	5.5	5.1	4.7	4.4	4.4	4.7	5.1	5.6	5.9	6.2	6.0	6.0	5.7	6.4	8.4	9.4	7.9	6.9	6.6	6.4	6.1	6.5	7.2	8.7	9.6	10.7	10.0	6.0	5.9	5.6	6.0	6.2	5.5
6.0	5.8	6.2	5.9	5.5	4.9	4.6	4.5	5.1	5.0	6.0	7.6	7.9	8.7	8.1	7.4	7.1	8.4	10.0	11.1	10.5	9.5	9.6	9.0	7.6	7.6	7.7	7.7	8.8	9.2	6.6	7.1	7.2	7.4	7.0	6.4
6.9	6.6	6.7	6.1	6.0	6.2	5.8	5.4	5.5	5.7	4.8	6.8	6.6	9.8	9.3	8.8	8.8	8.8	9.6	10.5	11.3	11.3	11.0	11.9	11.3	10.2	10.4	10.4	9.8	8.9	8.7	8.2	7.6	7.6	6.6	6.4
													8.7	9.6	9.6	8.6	9.3	9.4	9.8	11.7	12.2	13.5	13.2	12.4	13.3	14.5	13.2	13.3							
																9.0	7.7	8.7	4.4				7.3		10.4										

MONITORING OF SATELLITE TEMPERATURES

MONITORING CENTRE: EXETER

MONTH: Jan 2005

Monitoring procedures

Period :One calendar month.

Data monitored :Reports from NOAA-15, NOAA-16 and NOAA-17.

Standard of comparison :Background field from UKMO global model.

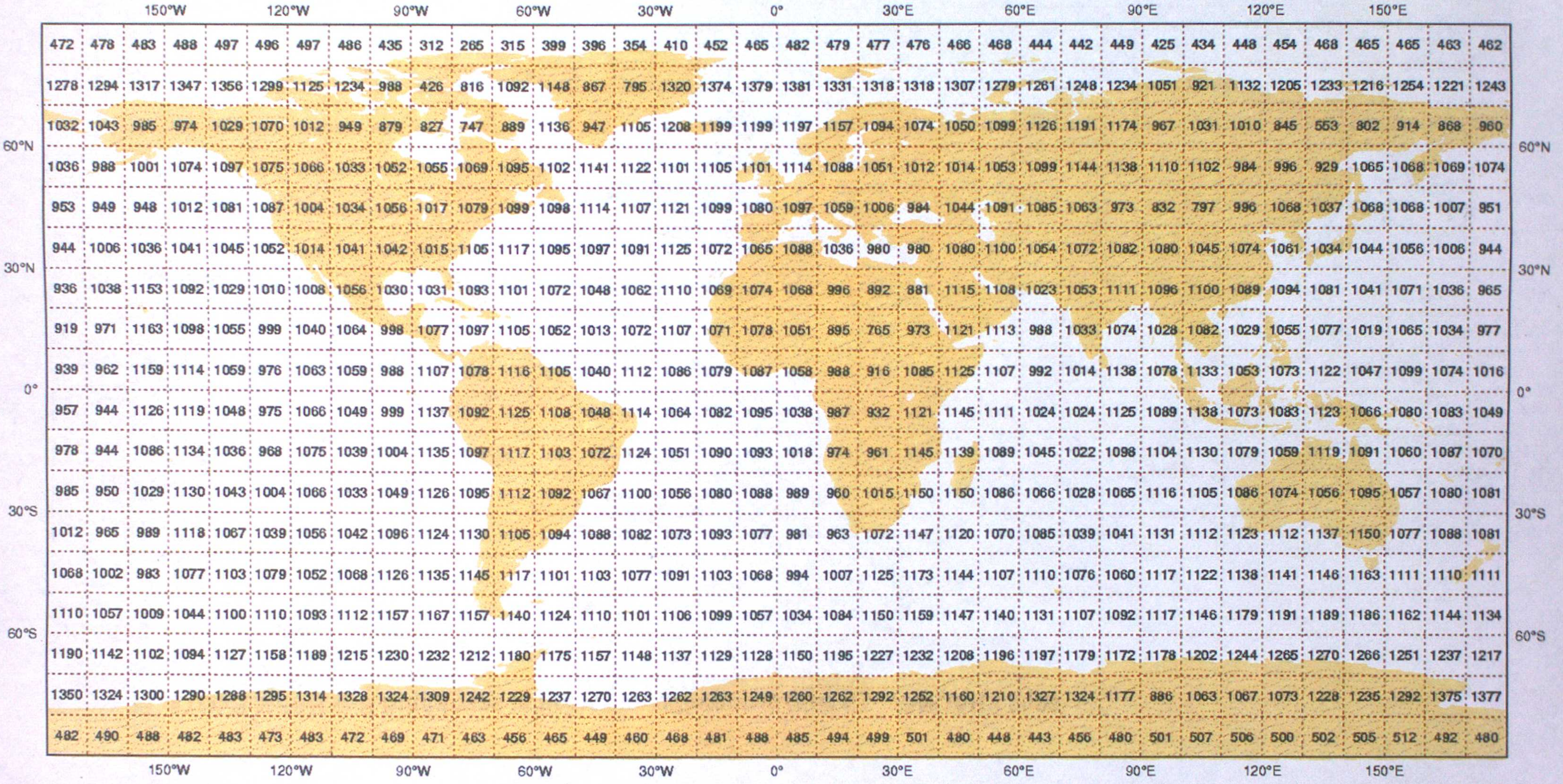
Selection Criteria :All soundings.

Data Extracted :Sounding channels (and approximate weighting function peaks, hPa)

HIRS8 (Surface)
HIRS15 (700)
HIRS11 (500-700)
HIRS4 (400)
AMSUA5 (700)
AMSUA7 (300)
AMSUA9 (100)

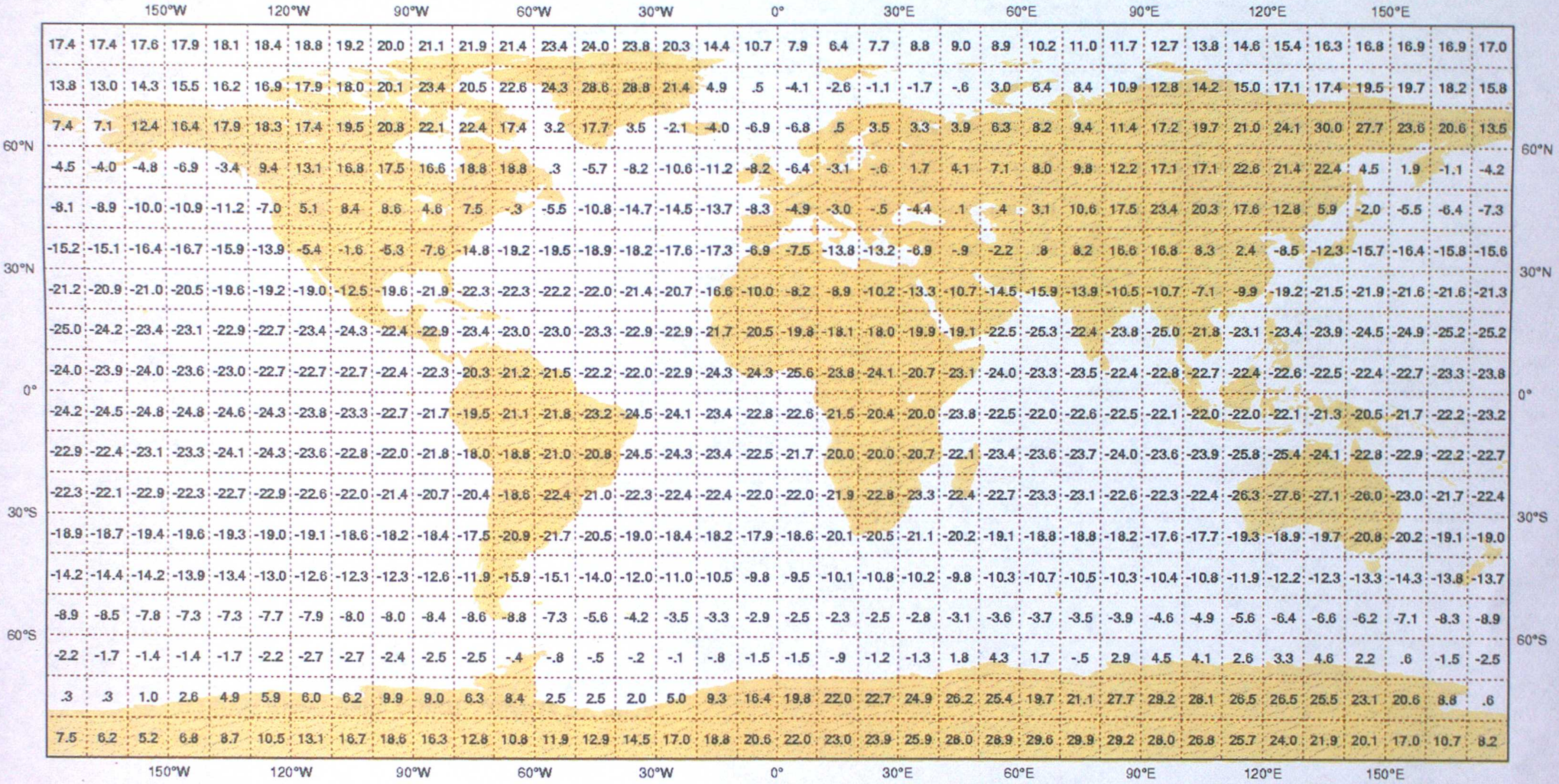
:Mean and standard deviation observation-minus-background brightness temperature differences

Figure 25. ATOVS mean daily count. JANUARY 2005
NOAA15, using all observations
Global average number of observations in 24 hours = 660718



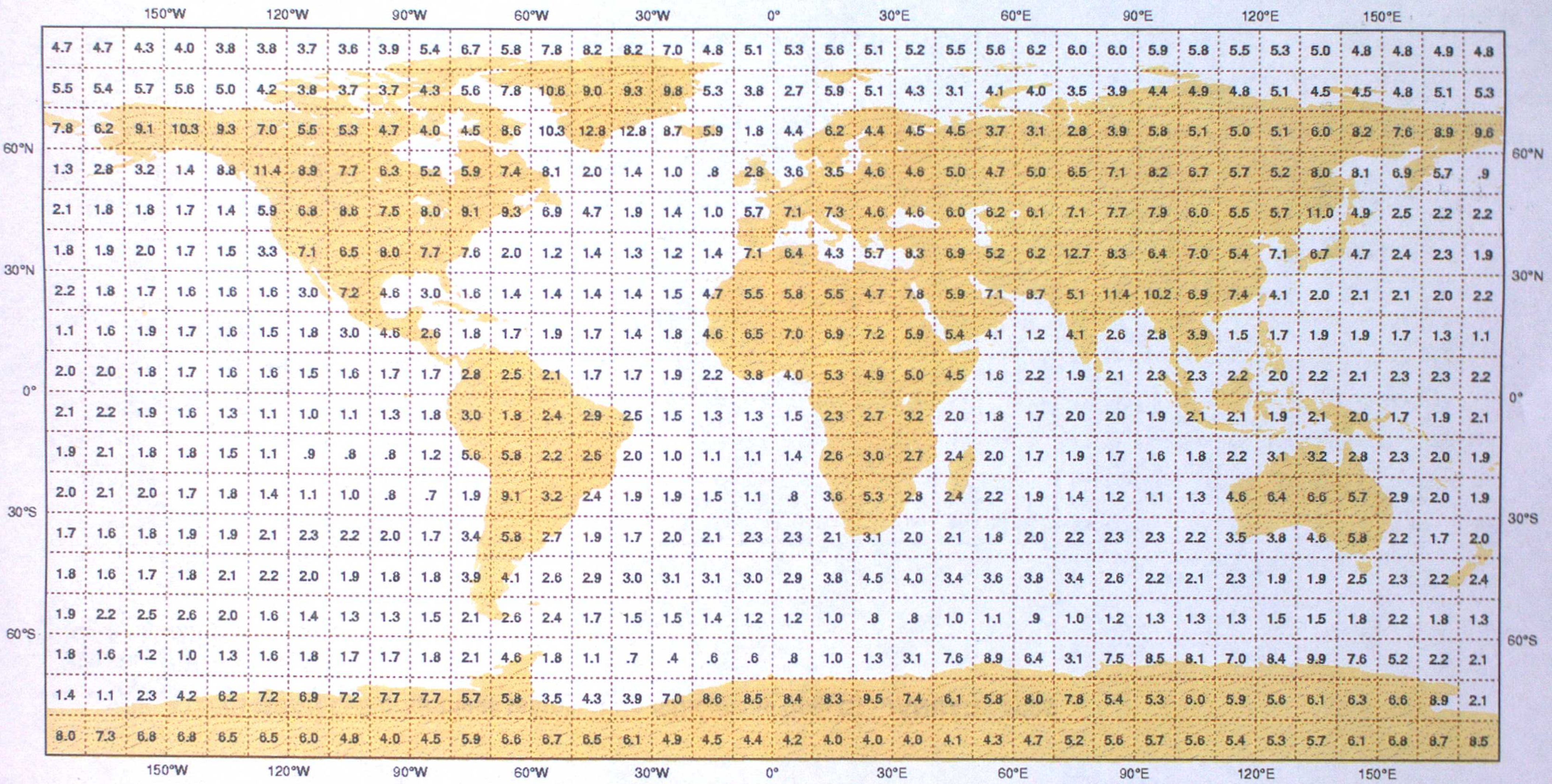
472	478	483	488	497	496	497	486	435	312	265	315	399	396	354	410	452	465	482	479	477	476	466	468	444	442	449	425	434	448	454	468	465	465	463	462
1278	1294	1317	1347	1356	1299	1125	1234	988	426	816	1092	1148	867	795	1320	1374	1379	1381	1331	1318	1318	1307	1279	1261	1248	1234	1051	921	1132	1205	1233	1216	1254	1221	1243
1032	1043	985	974	1029	1070	1012	949	879	827	747	889	1136	947	1105	1208	1199	1199	1197	1157	1094	1074	1050	1099	1126	1191	1174	967	1031	1010	845	553	802	914	868	960
1036	988	1001	1074	1097	1075	1066	1033	1052	1055	1069	1095	1102	1141	1122	1101	1105	1101	1114	1088	1051	1012	1014	1053	1099	1144	1138	1110	1102	984	996	929	1065	1068	1069	1074
953	949	948	1012	1081	1087	1004	1034	1056	1017	1079	1099	1098	1114	1107	1121	1099	1080	1097	1059	1006	984	1044	1091	1085	1063	973	832	797	996	1068	1037	1068	1068	1007	951
944	1006	1036	1041	1045	1052	1014	1041	1042	1015	1105	1117	1095	1097	1091	1125	1072	1065	1088	1036	980	980	1080	1100	1054	1072	1082	1080	1045	1074	1061	1034	1044	1056	1006	944
936	1038	1153	1092	1029	1010	1008	1056	1030	1031	1093	1101	1072	1048	1062	1110	1069	1074	1068	996	892	881	1115	1108	1023	1053	1111	1096	1100	1089	1094	1081	1041	1071	1036	965
919	971	1163	1098	1055	999	1040	1064	998	1077	1097	1105	1052	1013	1072	1107	1071	1078	1051	895	765	973	1121	1113	988	1033	1074	1028	1082	1029	1055	1077	1019	1065	1034	977
939	962	1159	1114	1059	976	1063	1059	988	1107	1078	1116	1105	1040	1112	1086	1079	1087	1058	988	916	1085	1125	1107	992	1014	1138	1078	1133	1053	1073	1122	1047	1099	1074	1016
957	944	1126	1119	1048	975	1066	1049	999	1137	1092	1125	1108	1048	1114	1064	1082	1095	1038	987	932	1121	1145	1111	1024	1024	1125	1089	1138	1073	1083	1123	1066	1080	1083	1049
978	944	1086	1134	1036	968	1075	1039	1004	1135	1097	1117	1103	1072	1124	1051	1090	1093	1018	974	961	1145	1139	1089	1045	1022	1098	1104	1130	1079	1059	1119	1091	1060	1087	1070
985	950	1029	1130	1043	1004	1066	1033	1049	1126	1095	1112	1092	1067	1100	1056	1080	1088	989	960	1015	1150	1150	1086	1066	1028	1065	1116	1105	1086	1074	1056	1095	1057	1080	1081
1012	965	989	1118	1067	1039	1056	1042	1096	1124	1130	1105	1094	1088	1082	1073	1093	1077	981	963	1072	1147	1120	1070	1085	1039	1041	1131	1112	1123	1112	1137	1150	1077	1088	1081
1068	1002	983	1077	1103	1079	1052	1068	1126	1135	1145	1117	1101	1103	1077	1091	1103	1068	994	1007	1125	1173	1144	1107	1110	1076	1060	1117	1122	1138	1141	1146	1163	1111	1110	1111
1110	1057	1009	1044	1100	1110	1093	1112	1157	1167	1157	1140	1124	1110	1101	1106	1099	1057	1034	1084	1150	1159	1147	1140	1131	1107	1092	1117	1146	1179	1191	1189	1186	1162	1144	1134
1190	1142	1102	1094	1127	1158	1189	1215	1230	1232	1212	1180	1175	1157	1148	1137	1129	1128	1150	1195	1227	1232	1208	1196	1197	1179	1172	1178	1202	1244	1265	1270	1266	1251	1237	1217
1350	1324	1300	1290	1288	1295	1314	1328	1324	1309	1242	1229	1237	1270	1263	1262	1263	1249	1260	1262	1292	1252	1160	1210	1327	1324	1177	886	1063	1067	1073	1228	1235	1292	1375	1377
482	490	488	482	483	473	483	472	469	471	463	456	465	449	460	468	481	488	485	494	499	501	480	448	443	456	480	501	507	506	500	502	505	512	492	480

Figure 26. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS8 (Surface)
NOAA15, using all observations



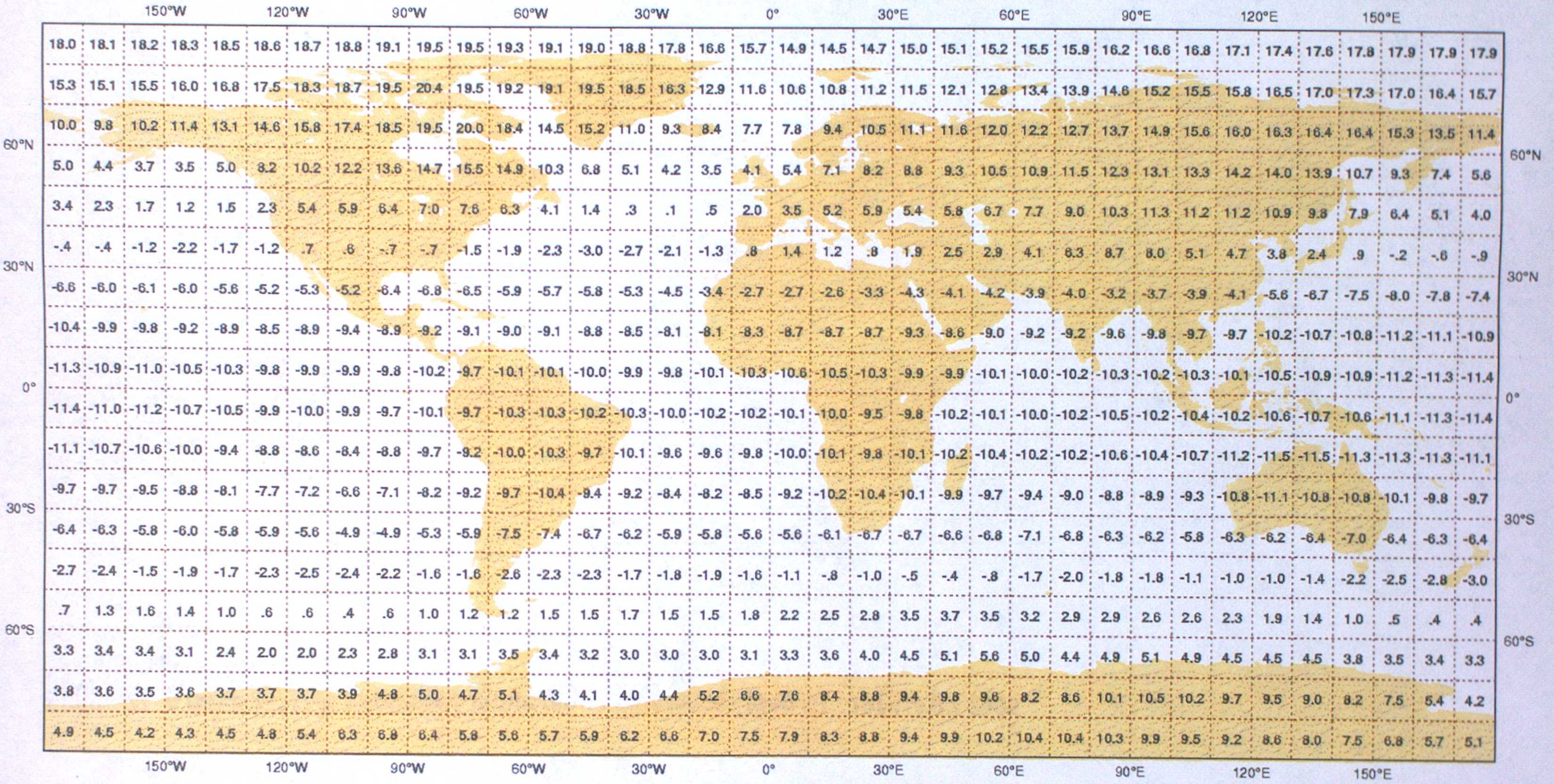
17.4	17.4	17.6	17.9	18.1	18.4	18.8	19.2	20.0	21.1	21.9	21.4	23.4	24.0	23.8	20.3	14.4	10.7	7.9	6.4	7.7	8.8	9.0	8.9	10.2	11.0	11.7	12.7	13.8	14.6	15.4	16.3	16.8	16.9	16.9	17.0
13.8	13.0	14.3	15.5	16.2	16.9	17.9	18.0	20.1	23.4	20.5	22.6	24.3	28.6	28.8	21.4	4.9	.5	-4.1	-2.6	-1.1	-1.7	-.6	3.0	6.4	8.4	10.9	12.8	14.2	15.0	17.1	17.4	19.5	19.7	18.2	15.8
7.4	7.1	12.4	16.4	17.9	18.3	17.4	19.5	20.8	22.1	22.4	17.4	3.2	17.7	3.5	-2.1	-4.0	-6.9	-6.8	.5	3.5	3.3	3.9	6.3	8.2	9.4	11.4	17.2	19.7	21.0	24.1	30.0	27.7	23.6	20.6	13.5
-4.5	-4.0	-4.8	-6.9	-3.4	9.4	13.1	16.8	17.5	16.6	18.8	18.8	.3	-5.7	-8.2	-10.6	-11.2	-8.2	-6.4	-3.1	-.6	1.7	4.1	7.1	8.0	9.8	12.2	17.1	17.1	22.6	21.4	22.4	4.5	1.9	-1.1	-4.2
-8.1	-8.9	-10.0	-10.9	-11.2	-7.0	5.1	8.4	8.6	4.6	7.5	-.3	-5.5	-10.8	-14.7	-14.5	-13.7	-8.3	-4.9	-3.0	-.5	-4.4	.1	.4	3.1	10.6	17.5	23.4	20.3	17.6	12.8	5.9	-2.0	-5.5	-6.4	-7.3
-15.2	-15.1	-16.4	-16.7	-15.9	-13.9	-5.4	-1.6	-5.3	-7.6	-14.8	-19.2	-19.5	-18.9	-18.2	-17.6	-17.3	-6.9	-7.5	-13.8	-13.2	-6.9	-.9	-2.2	.8	8.2	16.6	16.8	8.3	2.4	-8.5	-12.3	-15.7	-16.4	-15.8	-15.6
-21.2	-20.9	-21.0	-20.5	-19.6	-19.2	-19.0	-12.5	-19.6	-21.9	-22.3	-22.3	-22.2	-22.0	-21.4	-20.7	-16.6	-10.0	-8.2	-8.9	-10.2	-13.3	-10.7	-14.5	-15.9	-13.9	-10.5	-10.7	-7.1	-9.9	-19.2	-21.5	-21.9	-21.6	-21.6	-21.3
-25.0	-24.2	-23.4	-23.1	-22.9	-22.7	-23.4	-24.3	-22.4	-22.9	-23.4	-23.0	-23.0	-23.3	-22.9	-22.9	-21.7	-20.5	-19.8	-18.1	-18.0	-19.9	-19.1	-22.5	-25.3	-22.4	-23.8	-25.0	-21.8	-23.1	-23.4	-23.9	-24.5	-24.9	-25.2	-25.2
-24.0	-23.9	-24.0	-23.6	-23.0	-22.7	-22.7	-22.7	-22.4	-22.3	-20.3	-21.2	-21.5	-22.2	-22.0	-22.9	-24.3	-24.3	-25.6	-23.8	-24.1	-20.7	-23.1	-24.0	-23.3	-23.5	-22.4	-22.8	-22.7	-22.4	-22.6	-22.5	-22.4	-22.7	-23.3	-23.8
-24.2	-24.5	-24.8	-24.8	-24.6	-24.3	-23.8	-23.3	-22.7	-21.7	-19.5	-21.1	-21.8	-23.2	-24.5	-24.1	-23.4	-22.8	-22.6	-21.5	-20.4	-20.0	-23.8	-22.5	-22.0	-22.6	-22.5	-22.1	-22.0	-22.0	-22.1	-21.3	-20.5	-21.7	-22.2	-23.2
-22.9	-22.4	-23.1	-23.3	-24.1	-24.3	-23.6	-22.8	-22.0	-21.8	-18.0	-18.8	-21.0	-20.8	-24.5	-24.3	-23.4	-22.5	-21.7	-20.0	-20.0	-20.7	-22.1	-23.4	-23.6	-23.7	-24.0	-23.6	-23.9	-25.8	-25.4	-24.1	-22.8	-22.9	-22.2	-22.7
-22.3	-22.1	-22.9	-22.3	-22.7	-22.9	-22.6	-22.0	-21.4	-20.7	-20.4	-18.6	-22.4	-21.0	-22.3	-22.4	-22.4	-22.0	-22.0	-21.9	-22.8	-23.3	-22.4	-22.7	-23.3	-23.1	-22.6	-22.3	-22.4	-26.3	-27.6	-27.1	-26.0	-23.0	-21.7	-22.4
-18.9	-18.7	-19.4	-19.6	-19.3	-19.0	-19.1	-18.6	-18.2	-18.4	-17.5	-20.9	-21.7	-20.5	-19.0	-18.4	-18.2	-17.9	-18.6	-20.1	-20.5	-21.1	-20.2	-19.1	-18.8	-18.8	-18.2	-17.6	-17.7	-19.3	-18.9	-19.7	-20.8	-20.2	-19.1	-19.0
-14.2	-14.4	-14.2	-13.9	-13.4	-13.0	-12.6	-12.3	-12.3	-12.6	-11.9	-15.9	-15.1	-14.0	-12.0	-11.0	-10.5	-9.8	-9.5	-10.1	-10.8	-10.2	-9.8	-10.3	-10.7	-10.5	-10.3	-10.4	-10.8	-11.9	-12.2	-12.3	-13.3	-14.3	-13.8	-13.7
-8.9	-8.5	-7.8	-7.3	-7.3	-7.7	-7.9	-8.0	-8.0	-8.4	-8.6	-8.8	-7.3	-5.6	-4.2	-3.5	-3.3	-2.9	-2.5	-2.3	-2.5	-2.8	-3.1	-3.6	-3.7	-3.5	-3.9	-4.6	-4.9	-5.6	-6.4	-6.6	-6.2	-7.1	-8.3	-8.9
-2.2	-1.7	-1.4	-1.4	-1.7	-2.2	-2.7	-2.7	-2.4	-2.5	-2.5	-.4	-.8	-.5	-.2	-.1	-.8	-1.5	-1.5	-.9	-1.2	-1.3	1.8	4.3	1.7	-.5	2.9	4.5	4.1	2.6	3.3	4.6	2.2	.6	-1.5	-2.5
.3	.3	1.0	2.6	4.9	5.9	6.0	6.2	9.9	9.0	6.3	8.4	2.5	2.5	2.0	5.0	9.3	16.4	19.8	22.0	22.7	24.9	26.2	25.4	19.7	21.1	27.7	29.2	28.1	26.5	26.5	25.5	23.1	20.6	8.8	.6
7.5	6.2	5.2	6.8	8.7	10.5	13.1	16.7	18.6	16.3	12.8	10.8	11.9	12.9	14.5	17.0	18.8	20.6	22.0	23.0	23.9	25.9	28.0	28.9	29.6	29.9	29.2	28.0	26.8	25.7	24.0	21.9	20.1	17.0	10.7	8.2

Figure 27. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS8 (Surface)
NOAA15, using all observations



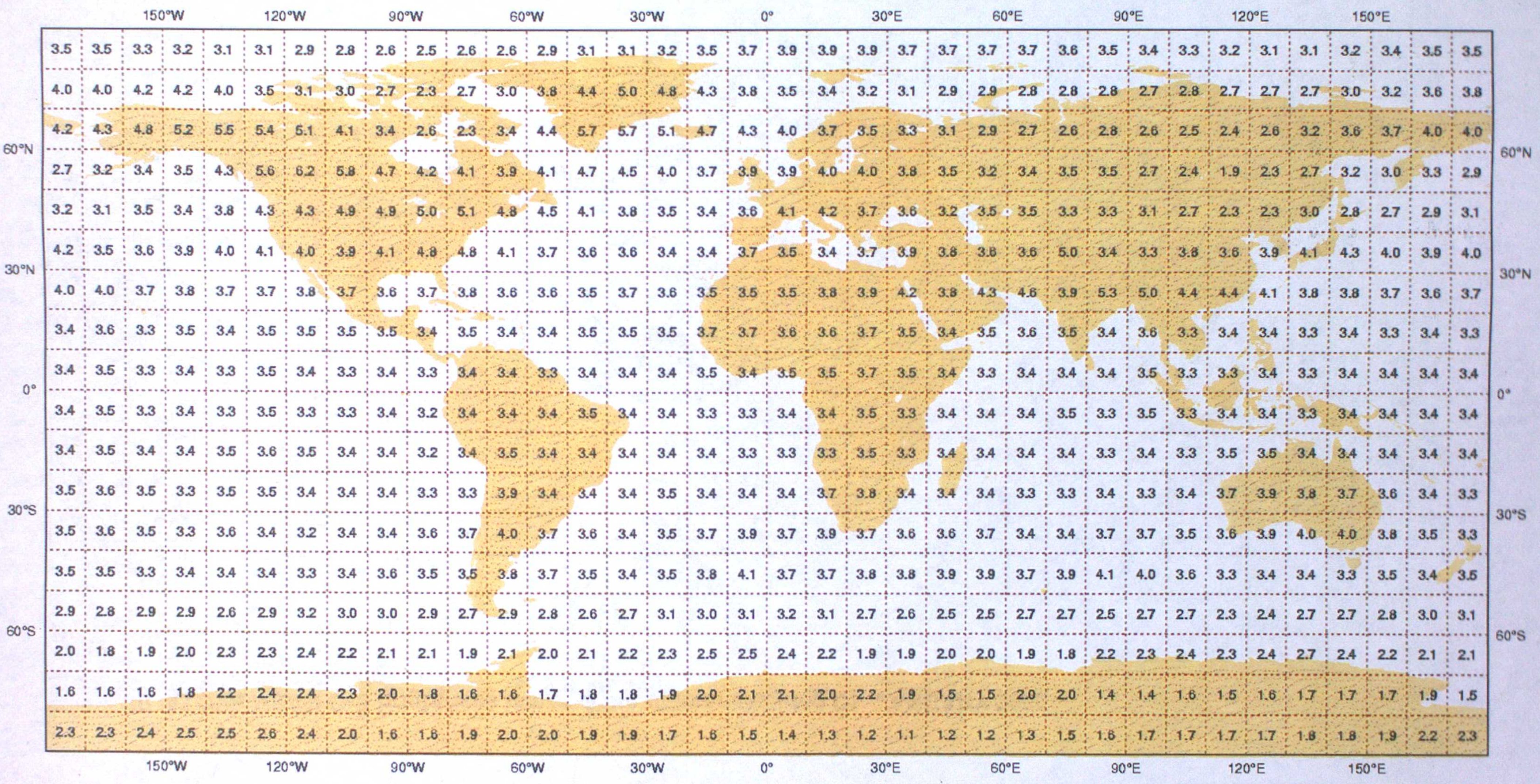
4.7	4.7	4.3	4.0	3.8	3.8	3.7	3.6	3.9	5.4	6.7	5.8	7.8	8.2	8.2	7.0	4.8	5.1	5.3	5.6	5.1	5.2	5.5	5.6	6.2	6.0	6.0	5.9	5.8	5.5	5.3	5.0	4.8	4.8	4.9	4.8
5.5	5.4	5.7	5.6	5.0	4.2	3.8	3.7	3.7	4.3	5.6	7.8	10.6	9.0	9.3	9.8	5.3	3.8	2.7	5.9	5.1	4.3	3.1	4.1	4.0	3.5	3.9	4.4	4.9	4.8	5.1	4.5	4.5	4.8	5.1	5.3
7.8	6.2	9.1	10.3	9.3	7.0	5.5	5.3	4.7	4.0	4.5	8.6	10.3	12.8	12.8	8.7	5.9	1.8	4.4	6.2	4.4	4.5	4.5	3.7	3.1	2.8	3.9	5.8	5.1	5.0	5.1	6.0	8.2	7.6	8.9	9.6
1.3	2.8	3.2	1.4	8.8	11.4	8.9	7.7	6.3	5.2	5.9	7.4	8.1	2.0	1.4	1.0	.8	2.8	3.6	3.5	4.6	4.6	5.0	4.7	5.0	6.5	7.1	8.2	6.7	5.7	5.2	8.0	8.1	6.9	5.7	.9
2.1	1.8	1.8	1.7	1.4	5.9	6.8	8.6	7.5	8.0	9.1	9.3	6.9	4.7	1.9	1.4	1.0	5.7	7.1	7.3	4.6	4.6	6.0	6.2	6.1	7.1	7.7	7.9	6.0	5.5	5.7	11.0	4.9	2.5	2.2	2.2
1.8	1.9	2.0	1.7	1.5	3.3	7.1	6.5	8.0	7.7	7.6	2.0	1.2	1.4	1.3	1.2	1.4	7.1	6.4	4.3	5.7	8.3	6.9	5.2	6.2	12.7	8.3	6.4	7.0	5.4	7.1	6.7	4.7	2.4	2.3	1.9
2.2	1.8	1.7	1.6	1.6	1.6	3.0	7.2	4.6	3.0	1.6	1.4	1.4	1.4	1.4	1.5	4.7	5.5	5.8	5.5	4.7	7.8	5.9	7.1	8.7	5.1	11.4	10.2	6.9	7.4	4.1	2.0	2.1	2.1	2.0	2.2
1.1	1.6	1.9	1.7	1.6	1.5	1.8	3.0	4.6	2.6	1.8	1.7	1.9	1.7	1.4	1.8	4.6	6.5	7.0	6.9	7.2	5.9	5.4	4.1	1.2	4.1	2.6	2.8	3.9	1.5	1.7	1.9	1.9	1.7	1.3	1.1
2.0	2.0	1.8	1.7	1.6	1.6	1.5	1.6	1.7	1.7	2.8	2.5	2.1	1.7	1.7	1.9	2.2	3.8	4.0	5.3	4.9	5.0	4.5	1.6	2.2	1.9	2.1	2.3	2.3	2.2	2.0	2.2	2.1	2.3	2.3	2.2
2.1	2.2	1.9	1.6	1.3	1.1	1.0	1.1	1.3	1.8	3.0	1.8	2.4	2.9	2.5	1.5	1.3	1.3	1.5	2.3	2.7	3.2	2.0	1.8	1.7	2.0	2.0	1.9	2.1	2.1	1.9	2.1	2.0	1.7	1.9	2.1
1.9	2.1	1.8	1.8	1.5	1.1	.9	.8	.8	1.2	5.6	5.8	2.2	2.5	2.0	1.0	1.1	1.1	1.4	2.6	3.0	2.7	2.4	2.0	1.7	1.9	1.7	1.6	1.8	2.2	3.1	3.2	2.8	2.3	2.0	1.9
2.0	2.1	2.0	1.7	1.8	1.4	1.1	1.0	.8	.7	1.9	9.1	3.2	2.4	1.9	1.9	1.5	1.1	.8	3.6	5.3	2.8	2.4	2.2	1.9	1.4	1.2	1.1	1.3	4.6	6.4	6.6	5.7	2.9	2.0	1.9
1.7	1.6	1.8	1.9	1.9	2.1	2.3	2.2	2.0	1.7	3.4	5.8	2.7	1.9	1.7	2.0	2.1	2.3	2.3	2.1	3.1	2.0	2.1	1.8	2.0	2.2	2.3	2.3	2.2	3.5	3.8	4.6	5.8	2.2	1.7	2.0
1.8	1.6	1.7	1.8	2.1	2.2	2.0	1.9	1.8	1.8	3.9	4.1	2.6	2.9	3.0	3.1	3.1	3.0	2.9	3.8	4.5	4.0	3.4	3.6	3.8	3.4	2.6	2.2	2.1	2.3	1.9	1.9	2.5	2.3	2.2	2.4
1.9	2.2	2.5	2.6	2.0	1.6	1.4	1.3	1.3	1.5	2.1	2.6	2.4	1.7	1.5	1.5	1.4	1.2	1.2	1.0	.8	.8	1.0	1.1	.9	1.0	1.2	1.3	1.3	1.3	1.5	1.5	1.8	2.2	1.8	1.3
1.8	1.6	1.2	1.0	1.3	1.6	1.8	1.7	1.7	1.8	2.1	4.6	1.8	1.1	.7	.4	.6	.6	.8	1.0	1.3	3.1	7.6	8.9	6.4	3.1	7.5	8.5	8.1	7.0	8.4	9.9	7.6	5.2	2.2	2.1
1.4	1.1	2.3	4.2	6.2	7.2	6.9	7.2	7.7	7.7	5.7	5.8	3.5	4.3	3.9	7.0	8.6	8.5	8.4	8.3	9.5	7.4	6.1	5.8	8.0	7.8	5.4	5.3	6.0	5.9	5.6	6.1	6.3	6.6	8.9	2.1
8.0	7.3	6.8	6.8	6.5	6.5	6.0	4.8	4.0	4.5	5.9	6.6	6.7	6.5	6.1	4.9	4.5	4.4	4.2	4.0	4.0	4.0	4.1	4.3	4.7	5.2	5.6	5.7	5.6	5.4	5.3	5.7	6.1	6.8	8.7	8.5

Figure 28. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



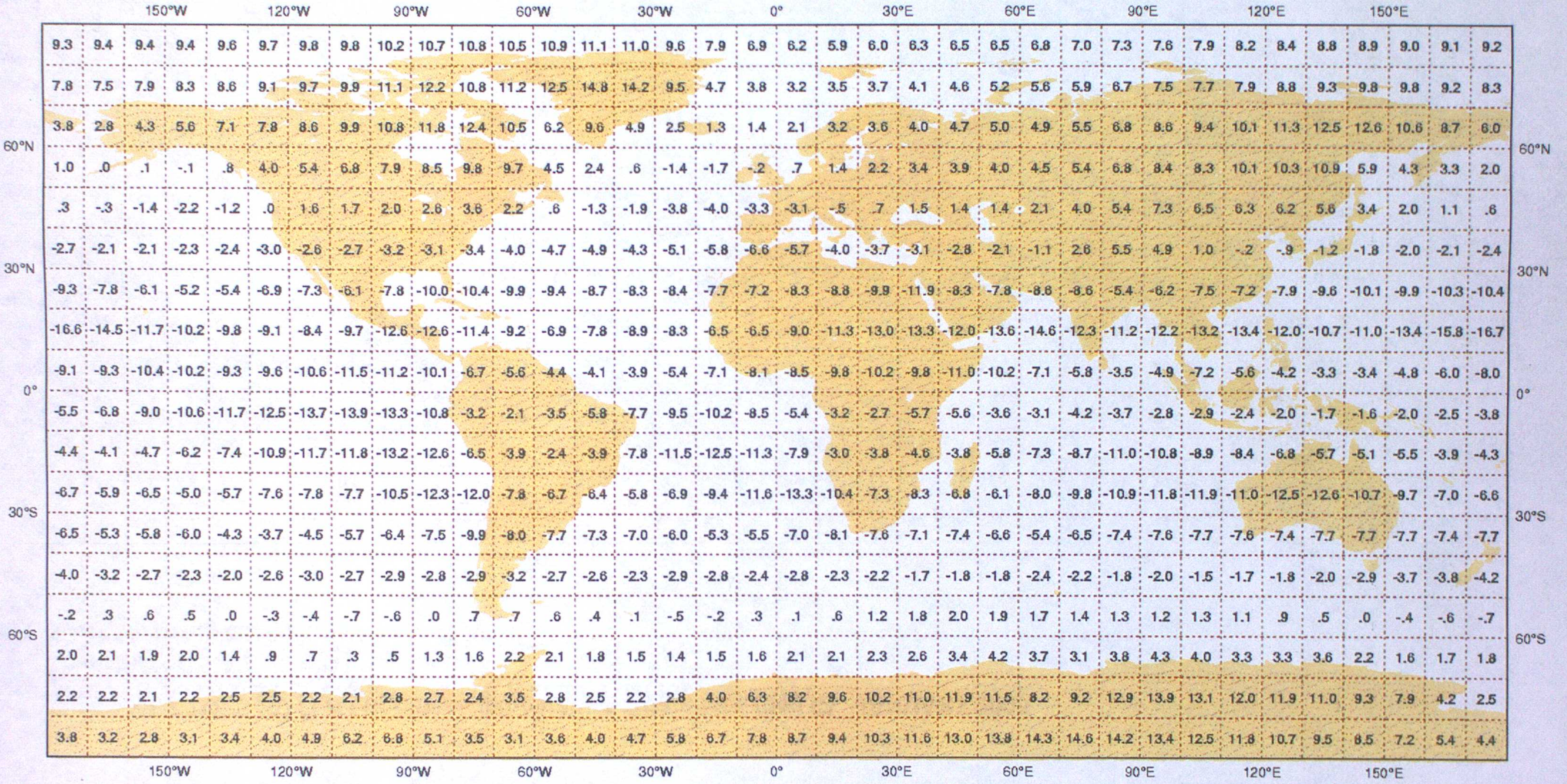
18.0	18.1	18.2	18.3	18.5	18.6	18.7	18.8	19.1	19.5	19.5	19.3	19.1	19.0	18.8	17.8	16.6	15.7	14.9	14.5	14.7	15.0	15.1	15.2	15.5	15.9	16.2	16.6	16.8	17.1	17.4	17.6	17.8	17.9	17.9	17.9
15.3	15.1	15.5	16.0	16.8	17.5	18.3	18.7	19.5	20.4	19.5	19.2	19.1	19.5	18.5	16.3	12.9	11.6	10.6	10.8	11.2	11.5	12.1	12.8	13.4	13.9	14.6	15.2	15.5	15.8	16.5	17.0	17.3	17.0	16.4	15.7
10.0	9.8	10.2	11.4	13.1	14.6	15.8	17.4	18.5	19.5	20.0	18.4	14.5	15.2	11.0	9.3	8.4	7.7	7.8	9.4	10.5	11.1	11.6	12.0	12.2	12.7	13.7	14.9	15.6	16.0	16.3	16.4	16.4	15.3	13.5	11.4
5.0	4.4	3.7	3.5	5.0	8.2	10.2	12.2	13.6	14.7	15.5	14.9	10.3	6.8	5.1	4.2	3.5	4.1	5.4	7.1	8.2	8.8	9.3	10.5	10.9	11.5	12.3	13.1	13.3	14.2	14.0	13.9	10.7	9.3	7.4	5.6
3.4	2.3	1.7	1.2	1.5	2.3	5.4	5.9	6.4	7.0	7.6	6.3	4.1	1.4	.3	.1	.5	2.0	3.5	5.2	5.9	5.4	5.8	6.7	7.7	9.0	10.3	11.3	11.2	11.2	10.9	9.8	7.9	6.4	5.1	4.0
-.4	-.4	-1.2	-2.2	-1.7	-1.2	.7	.6	-.7	-.7	-1.5	-1.9	-2.3	-3.0	-2.7	-2.1	-1.3	.8	1.4	1.2	.8	1.9	2.5	2.9	4.1	6.3	8.7	8.0	5.1	4.7	3.8	2.4	.9	-.2	-.6	-.9
-6.6	-6.0	-6.1	-6.0	-5.6	-5.2	-5.3	-5.2	-6.4	-6.8	-6.5	-5.9	-5.7	-5.8	-5.3	-4.5	-3.4	-2.7	-2.7	-2.6	-3.3	-4.3	-4.1	-4.2	-3.9	-4.0	-3.2	-3.7	-3.9	-4.1	-5.6	-6.7	-7.5	-8.0	-7.8	-7.4
-10.4	-9.9	-9.8	-9.2	-8.9	-8.5	-8.9	-9.4	-8.9	-9.2	-9.1	-9.0	-9.1	-8.8	-8.5	-8.1	-8.1	-8.3	-8.7	-8.7	-8.7	-9.3	-8.6	-9.0	-9.2	-9.2	-9.6	-9.8	-9.7	-9.7	-10.2	-10.7	-10.8	-11.2	-11.1	-10.9
-11.3	-10.9	-11.0	-10.5	-10.3	-9.8	-9.9	-9.9	-9.8	-10.2	-9.7	-10.1	-10.1	-10.0	-9.9	-9.8	-10.1	-10.3	-10.6	-10.5	-10.3	-9.9	-9.9	-10.1	-10.0	-10.2	-10.3	-10.2	-10.3	-10.1	-10.5	-10.9	-10.9	-11.2	-11.3	-11.4
-11.4	-11.0	-11.2	-10.7	-10.5	-9.9	-10.0	-9.9	-9.7	-10.1	-9.7	-10.3	-10.3	-10.2	-10.3	-10.0	-10.2	-10.2	-10.1	-10.0	-9.5	-9.8	-10.2	-10.1	-10.0	-10.2	-10.5	-10.2	-10.4	-10.2	-10.6	-10.7	-10.6	-11.1	-11.3	-11.4
-11.1	-10.7	-10.6	-10.0	-9.4	-8.8	-8.6	-8.4	-8.8	-9.7	-9.2	-10.0	-10.3	-9.7	-10.1	-9.6	-9.6	-9.8	-10.0	-10.1	-9.8	-10.1	-10.2	-10.4	-10.2	-10.2	-10.6	-10.4	-10.7	-11.2	-11.5	-11.5	-11.3	-11.3	-11.3	-11.1
-9.7	-9.7	-9.5	-8.8	-8.1	-7.7	-7.2	-6.6	-7.1	-8.2	-9.2	-9.7	-10.4	-9.4	-9.2	-8.4	-8.2	-8.5	-9.2	-10.2	-10.4	-10.1	-9.9	-9.7	-9.4	-9.0	-8.8	-8.9	-9.3	-10.8	-11.1	-10.8	-10.8	-10.1	-9.8	-9.7
-6.4	-6.3	-5.8	-6.0	-5.8	-5.9	-5.6	-4.9	-4.9	-5.3	-5.9	-7.5	-7.4	-6.7	-6.2	-5.9	-5.8	-5.6	-5.6	-6.1	-6.7	-6.7	-6.6	-6.8	-7.1	-6.8	-6.3	-6.2	-5.8	-6.3	-6.2	-6.4	-7.0	-6.4	-6.3	-6.4
-2.7	-2.4	-1.5	-1.9	-1.7	-2.3	-2.5	-2.4	-2.2	-1.6	-1.6	-2.6	-2.3	-2.3	-1.7	-1.8	-1.9	-1.6	-1.1	-.8	-1.0	-.5	-.4	-.8	-1.7	-2.0	-1.8	-1.8	-1.1	-1.0	-1.0	-1.4	-2.2	-2.5	-2.8	-3.0
.7	1.3	1.6	1.4	1.0	.6	.6	.4	.6	1.0	1.2	1.2	1.5	1.5	1.7	1.5	1.5	1.8	2.2	2.5	2.8	3.5	3.7	3.5	3.2	2.9	2.9	2.6	2.6	2.3	1.9	1.4	1.0	.5	.4	.4
3.3	3.4	3.4	3.1	2.4	2.0	2.0	2.3	2.8	3.1	3.1	3.5	3.4	3.2	3.0	3.0	3.0	3.1	3.3	3.6	4.0	4.5	5.1	5.6	5.0	4.4	4.9	5.1	4.9	4.5	4.5	4.5	3.8	3.5	3.4	3.3
3.8	3.6	3.5	3.6	3.7	3.7	3.7	3.9	4.8	5.0	4.7	5.1	4.3	4.1	4.0	4.4	5.2	6.6	7.6	8.4	8.8	9.4	9.8	9.6	8.2	8.6	10.1	10.5	10.2	9.7	9.5	9.0	8.2	7.5	5.4	4.2
4.9	4.5	4.2	4.3	4.5	4.8	5.4	6.3	6.8	6.4	5.8	5.6	5.7	5.9	6.2	6.6	7.0	7.5	7.9	8.3	8.8	9.4	9.9	10.2	10.4	10.4	10.3	9.9	9.5	9.2	8.6	8.0	7.5	6.8	5.7	5.1

Figure 29. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS15 (700 hPa)
NOAA15, using all observations



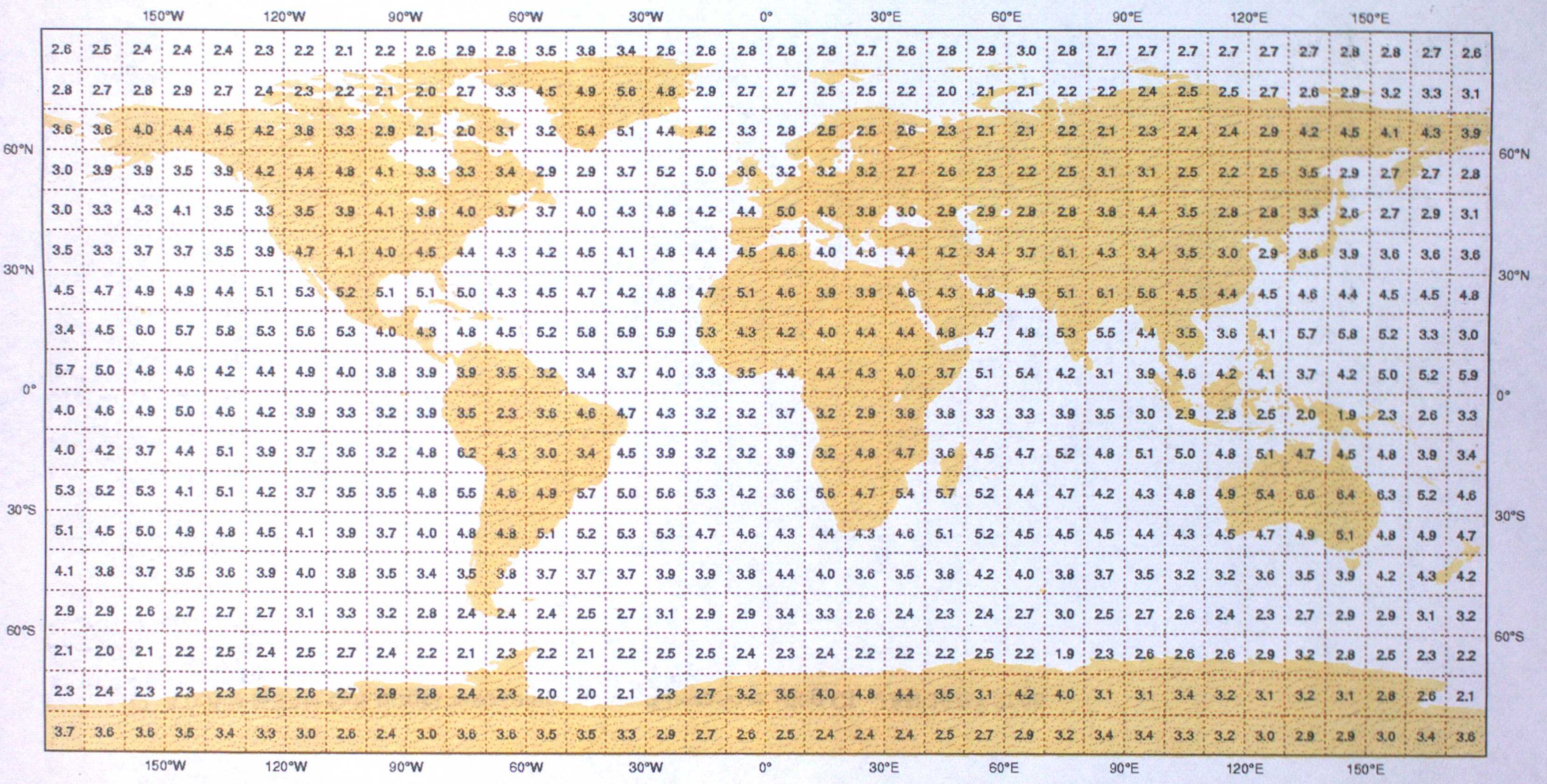
3.5	3.5	3.3	3.2	3.1	3.1	2.9	2.8	2.6	2.5	2.6	2.6	2.9	3.1	3.1	3.2	3.5	3.7	3.9	3.9	3.9	3.7	3.7	3.7	3.7	3.6	3.5	3.4	3.3	3.2	3.1	3.1	3.2	3.4	3.5	3.5
4.0	4.0	4.2	4.2	4.0	3.5	3.1	3.0	2.7	2.3	2.7	3.0	3.8	4.4	5.0	4.8	4.3	3.8	3.5	3.4	3.2	3.1	2.9	2.9	2.8	2.8	2.8	2.7	2.8	2.7	2.7	2.7	3.0	3.2	3.6	3.8
4.2	4.3	4.8	5.2	5.5	5.4	5.1	4.1	3.4	2.6	2.3	3.4	4.4	5.7	5.7	5.1	4.7	4.3	4.0	3.7	3.5	3.3	3.1	2.9	2.7	2.6	2.8	2.6	2.5	2.4	2.6	3.2	3.6	3.7	4.0	4.0
2.7	3.2	3.4	3.5	4.3	5.6	6.2	5.8	4.7	4.2	4.1	3.9	4.1	4.7	4.5	4.0	3.7	3.9	3.9	4.0	4.0	3.8	3.5	3.2	3.4	3.5	3.5	2.7	2.4	1.9	2.3	2.7	3.2	3.0	3.3	2.9
3.2	3.1	3.5	3.4	3.8	4.3	4.3	4.9	4.9	5.0	5.1	4.8	4.5	4.1	3.8	3.5	3.4	3.6	4.1	4.2	3.7	3.6	3.2	3.5	3.5	3.3	3.3	3.1	2.7	2.3	2.3	3.0	2.8	2.7	2.9	3.1
4.2	3.5	3.6	3.9	4.0	4.1	4.0	3.9	4.1	4.8	4.8	4.1	3.7	3.6	3.6	3.4	3.4	3.7	3.5	3.4	3.7	3.9	3.8	3.8	3.6	5.0	3.4	3.3	3.8	3.6	3.9	4.1	4.3	4.0	3.9	4.0
4.0	4.0	3.7	3.8	3.7	3.7	3.8	3.7	3.6	3.7	3.8	3.6	3.6	3.5	3.7	3.6	3.5	3.5	3.5	3.8	3.9	4.2	3.8	4.3	4.6	3.9	5.3	5.0	4.4	4.4	4.1	3.8	3.8	3.7	3.6	3.7
3.4	3.6	3.3	3.5	3.4	3.5	3.5	3.5	3.5	3.4	3.5	3.4	3.4	3.5	3.5	3.5	3.7	3.7	3.6	3.6	3.7	3.5	3.4	3.5	3.6	3.5	3.4	3.6	3.3	3.4	3.4	3.3	3.4	3.3	3.4	3.3
3.4	3.5	3.3	3.4	3.3	3.5	3.4	3.3	3.4	3.3	3.4	3.4	3.3	3.4	3.4	3.4	3.5	3.4	3.5	3.5	3.7	3.5	3.4	3.3	3.4	3.4	3.4	3.5	3.3	3.3	3.4	3.3	3.4	3.4	3.4	3.4
3.4	3.5	3.3	3.4	3.3	3.5	3.3	3.3	3.4	3.2	3.4	3.4	3.4	3.5	3.4	3.4	3.3	3.3	3.4	3.4	3.5	3.3	3.4	3.4	3.4	3.5	3.3	3.5	3.3	3.4	3.4	3.3	3.4	3.4	3.4	3.4
3.4	3.5	3.4	3.4	3.5	3.6	3.5	3.4	3.4	3.2	3.4	3.5	3.4	3.4	3.4	3.4	3.3	3.3	3.3	3.5	3.3	3.4	3.4	3.4	3.4	3.4	3.3	3.4	3.3	3.5	3.5	3.4	3.4	3.4	3.4	3.4
3.5	3.6	3.5	3.3	3.5	3.5	3.4	3.4	3.4	3.3	3.3	3.9	3.4	3.4	3.4	3.5	3.4	3.4	3.4	3.7	3.8	3.4	3.4	3.4	3.3	3.3	3.4	3.3	3.4	3.7	3.9	3.8	3.7	3.6	3.4	3.3
3.5	3.6	3.5	3.3	3.6	3.4	3.2	3.4	3.4	3.6	3.7	4.0	3.7	3.6	3.4	3.5	3.7	3.9	3.7	3.9	3.7	3.6	3.6	3.7	3.4	3.4	3.7	3.7	3.5	3.6	3.9	4.0	4.0	3.8	3.5	3.3
3.5	3.5	3.3	3.4	3.4	3.4	3.3	3.4	3.6	3.5	3.5	3.8	3.7	3.5	3.4	3.5	3.8	4.1	3.7	3.7	3.8	3.8	3.9	3.9	3.7	3.9	4.1	4.0	3.6	3.3	3.4	3.4	3.3	3.5	3.4	3.5
2.9	2.8	2.9	2.9	2.6	2.9	3.2	3.0	3.0	2.9	2.7	2.9	2.8	2.6	2.7	3.1	3.0	3.1	3.2	3.1	2.7	2.6	2.5	2.5	2.7	2.7	2.5	2.7	2.7	2.3	2.4	2.7	2.7	2.8	3.0	3.1
2.0	1.8	1.9	2.0	2.3	2.3	2.4	2.2	2.1	2.1	1.9	2.1	2.0	2.1	2.2	2.3	2.5	2.5	2.4	2.2	1.9	1.9	2.0	2.0	1.9	1.8	2.2	2.3	2.4	2.3	2.4	2.7	2.4	2.2	2.1	2.1
1.6	1.6	1.6	1.8	2.2	2.4	2.4	2.3	2.0	1.8	1.6	1.6	1.7	1.8	1.8	1.9	2.0	2.1	2.1	2.0	2.2	1.9	1.5	1.5	2.0	2.0	1.4	1.4	1.6	1.5	1.6	1.7	1.7	1.7	1.9	1.5
2.3	2.3	2.4	2.5	2.5	2.6	2.4	2.0	1.6	1.6	1.9	2.0	2.0	1.9	1.9	1.7	1.6	1.5	1.4	1.3	1.2	1.1	1.2	1.2	1.3	1.5	1.6	1.7	1.7	1.7	1.7	1.8	1.8	1.9	2.2	2.3

Figure 30. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



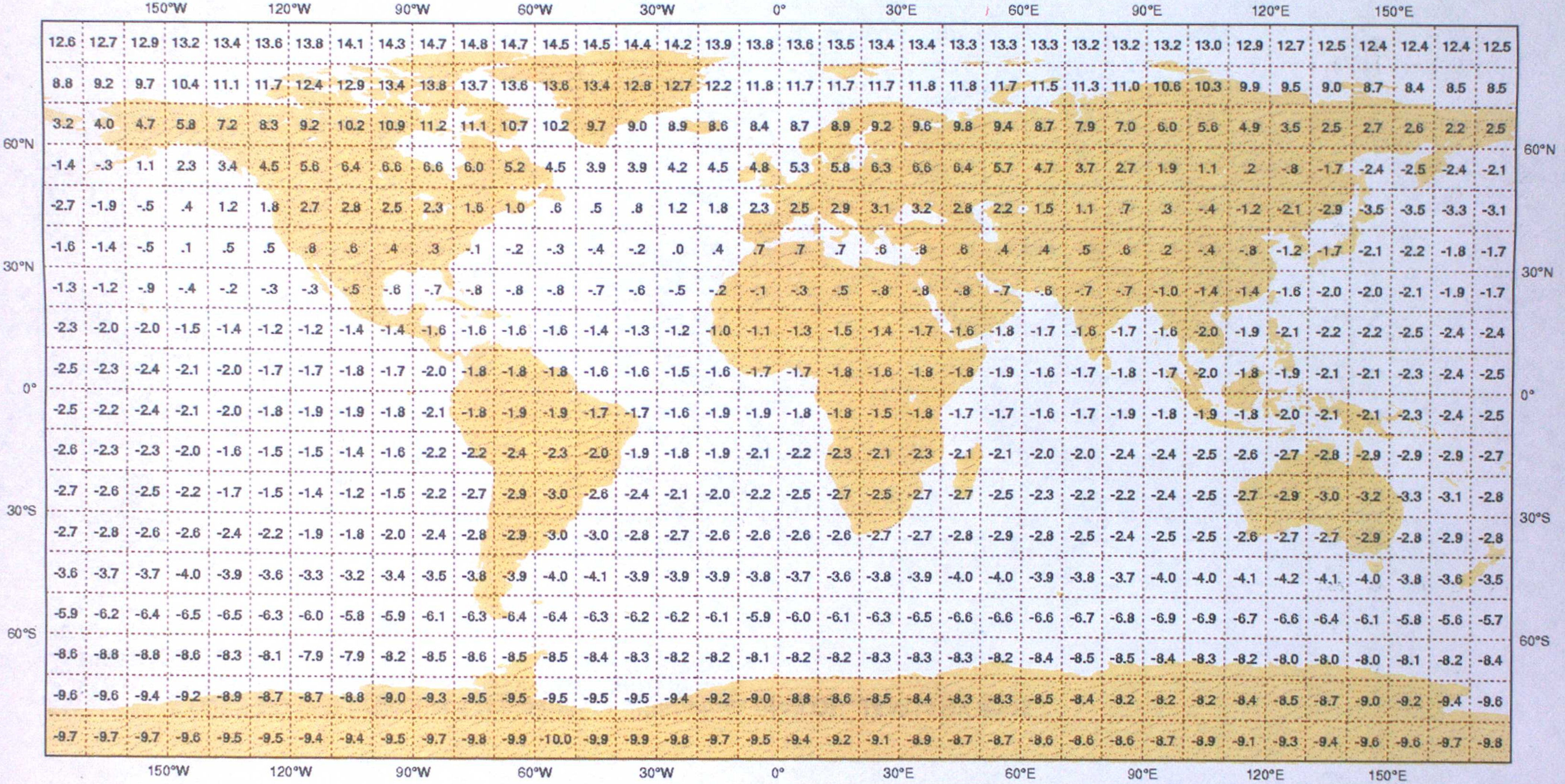
9.3	9.4	9.4	9.4	9.6	9.7	9.8	9.8	10.2	10.7	10.8	10.5	10.9	11.1	11.0	9.6	7.9	6.9	6.2	5.9	6.0	6.3	6.5	6.5	6.8	7.0	7.3	7.6	7.9	8.2	8.4	8.8	8.9	9.0	9.1	9.2
7.8	7.5	7.9	8.3	8.6	9.1	9.7	9.9	11.1	12.2	10.8	11.2	12.5	14.8	14.2	9.5	4.7	3.8	3.2	3.5	3.7	4.1	4.6	5.2	5.6	5.9	6.7	7.5	7.7	7.9	8.8	9.3	9.8	9.8	9.2	8.3
3.8	2.8	4.3	5.6	7.1	7.8	8.6	9.9	10.8	11.8	12.4	10.5	6.2	9.6	4.9	2.5	1.3	1.4	2.1	3.2	3.6	4.0	4.7	5.0	4.9	5.5	6.8	8.6	9.4	10.1	11.3	12.5	12.6	10.6	8.7	6.0
1.0	.0	.1	-.1	.8	4.0	5.4	6.8	7.9	8.5	9.8	9.7	4.5	2.4	.6	-1.4	-1.7	-.2	.7	1.4	2.2	3.4	3.9	4.0	4.5	5.4	6.8	8.4	8.3	10.1	10.3	10.9	5.9	4.3	3.3	2.0
.3	-.3	-1.4	-2.2	-1.2	.0	1.6	1.7	2.0	2.6	3.6	2.2	.6	-1.3	-1.9	-3.8	-4.0	-3.3	-3.1	-.5	.7	1.5	1.4	1.4	2.1	4.0	5.4	7.3	6.5	6.3	6.2	5.6	3.4	2.0	1.1	.6
-2.7	-2.1	-2.1	-2.3	-2.4	-3.0	-2.6	-2.7	-3.2	-3.1	-3.4	-4.0	-4.7	-4.9	-4.3	-5.1	-5.8	-6.6	-5.7	-4.0	-3.7	-3.1	-2.8	-2.1	-1.1	2.6	5.5	4.9	1.0	-.2	-.9	-1.2	-1.8	-2.0	-2.1	-2.4
-9.3	-7.8	-6.1	-5.2	-5.4	-6.9	-7.3	-6.1	-7.8	-10.0	-10.4	-9.9	-9.4	-8.7	-8.3	-8.4	-7.7	-7.2	-8.3	-8.8	-9.9	-11.9	-8.3	-7.8	-8.6	-8.6	-5.4	-6.2	-7.5	-7.2	-7.9	-9.6	-10.1	-9.9	-10.3	-10.4
-16.6	-14.5	-11.7	-10.2	-9.8	-9.1	-8.4	-9.7	-12.6	-12.6	-11.4	-9.2	-6.9	-7.8	-8.9	-8.3	-6.5	-6.5	-9.0	-11.3	-13.0	-13.3	-12.0	-13.6	-14.6	-12.3	-11.2	-12.2	-13.2	-13.4	-12.0	-10.7	-11.0	-13.4	-15.8	-16.7
-9.1	-9.3	-10.4	-10.2	-9.3	-9.6	-10.6	-11.5	-11.2	-10.1	-6.7	-5.6	-4.4	-4.1	-3.9	-5.4	-7.1	-8.1	-8.5	-9.8	-10.2	-9.8	-11.0	-10.2	-7.1	-5.8	-3.5	-4.9	-7.2	-5.6	-4.2	-3.3	-3.4	-4.8	-6.0	-8.0
-5.5	-6.8	-9.0	-10.6	-11.7	-12.5	-13.7	-13.9	-13.3	-10.8	-3.2	-2.1	-3.5	-5.8	-7.7	-9.5	-10.2	-8.5	-5.4	-3.2	-2.7	-5.7	-5.6	-3.6	-3.1	-4.2	-3.7	-2.8	-2.9	-2.4	-2.0	-1.7	-1.6	-2.0	-2.5	-3.8
-4.4	-4.1	-4.7	-6.2	-7.4	-10.9	-11.7	-11.8	-13.2	-12.6	-6.5	-3.9	-2.4	-3.9	-7.8	-11.5	-12.5	-11.3	-7.9	-3.0	-3.8	-4.6	-3.8	-5.8	-7.3	-8.7	-11.0	-10.8	-8.9	-8.4	-6.8	-5.7	-5.1	-5.5	-3.9	-4.3
-6.7	-5.9	-6.5	-5.0	-5.7	-7.6	-7.8	-7.7	-10.5	-12.3	-12.0	-7.8	-6.7	-6.4	-5.8	-6.9	-9.4	-11.6	-13.3	-10.4	-7.3	-8.3	-6.8	-6.1	-8.0	-9.8	-10.9	-11.8	-11.9	-11.0	-12.5	-12.6	-10.7	-9.7	-7.0	-6.6
-6.5	-5.3	-5.8	-6.0	-4.3	-3.7	-4.5	-5.7	-6.4	-7.5	-9.9	-8.0	-7.7	-7.3	-7.0	-6.0	-5.3	-5.5	-7.0	-8.1	-7.6	-7.1	-7.4	-6.6	-5.4	-6.5	-7.4	-7.6	-7.7	-7.6	-7.4	-7.7	-7.7	-7.7	-7.4	-7.7
-4.0	-3.2	-2.7	-2.3	-2.0	-2.6	-3.0	-2.7	-2.9	-2.8	-2.9	-3.2	-2.7	-2.6	-2.3	-2.9	-2.8	-2.4	-2.8	-2.3	-2.2	-1.7	-1.8	-1.8	-2.4	-2.2	-1.8	-2.0	-1.5	-1.7	-1.8	-2.0	-2.9	-3.7	-3.8	-4.2
-.2	.3	.6	.5	.0	-.3	-.4	-.7	-.6	.0	.7	.7	.6	.4	.1	-.5	-.2	.3	.1	.6	1.2	1.8	2.0	1.9	1.7	1.4	1.3	1.2	1.3	1.1	.9	.5	.0	-.4	-.6	-.7
2.0	2.1	1.9	2.0	1.4	.9	.7	.3	.5	1.3	1.6	2.2	2.1	1.8	1.5	1.4	1.5	1.6	2.1	2.1	2.3	2.6	3.4	4.2	3.7	3.1	3.8	4.3	4.0	3.3	3.3	3.6	2.2	1.6	1.7	1.8
2.2	2.2	2.1	2.2	2.5	2.5	2.2	2.1	2.8	2.7	2.4	3.5	2.8	2.5	2.2	2.8	4.0	6.3	8.2	9.6	10.2	11.0	11.9	11.5	8.2	9.2	12.9	13.9	13.1	12.0	11.9	11.0	9.3	7.9	4.2	2.5
3.8	3.2	2.8	3.1	3.4	4.0	4.9	6.2	6.8	5.1	3.5	3.1	3.6	4.0	4.7	5.8	6.7	7.8	8.7	9.4	10.3	11.6	13.0	13.8	14.3	14.6	14.2	13.4	12.5	11.8	10.7	9.5	8.5	7.2	5.4	4.4

Figure 31. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA15, using all observations



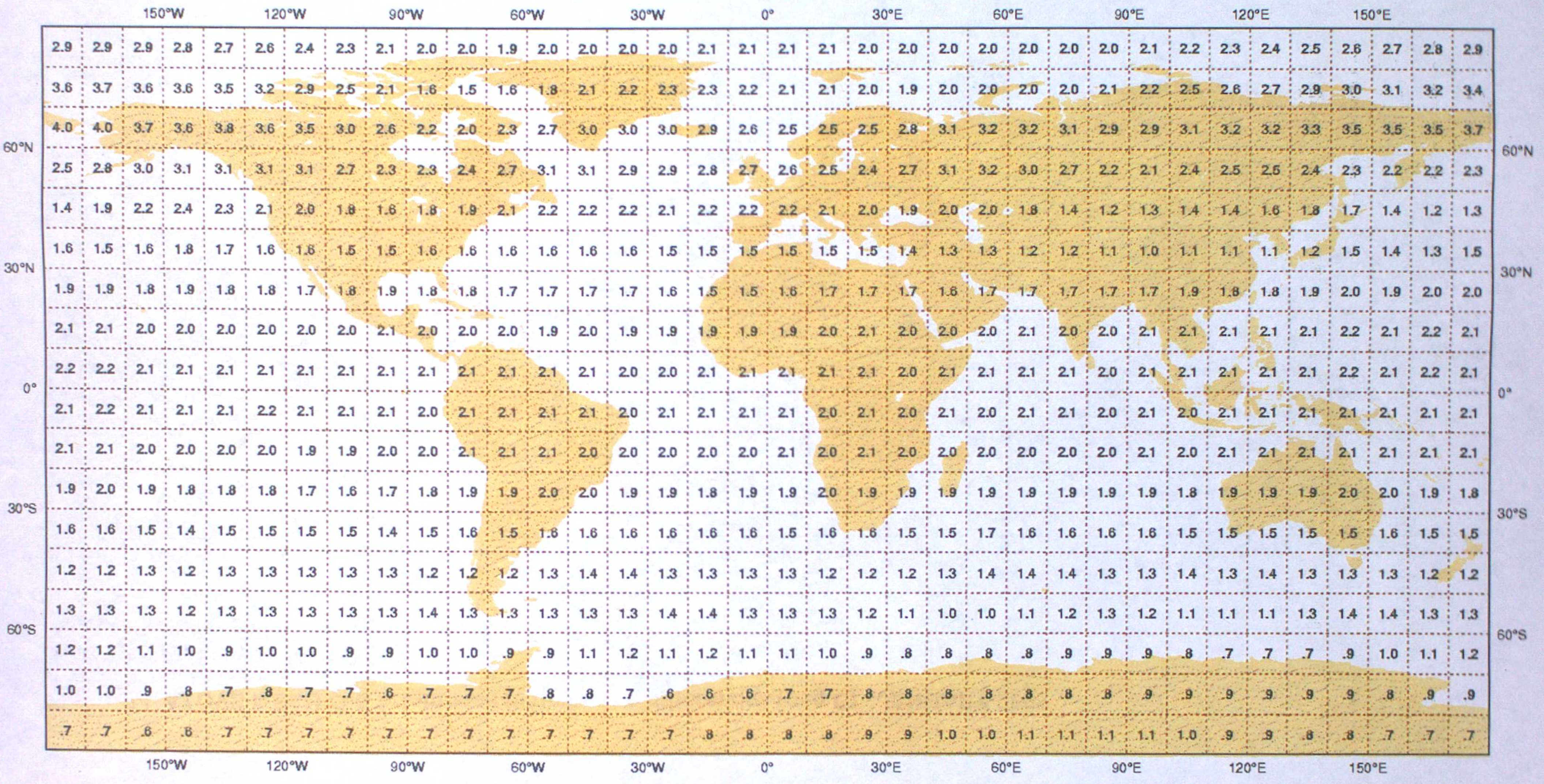
2.6	2.5	2.4	2.4	2.4	2.3	2.2	2.1	2.2	2.6	2.9	2.8	3.5	3.8	3.4	2.6	2.6	2.8	2.8	2.8	2.7	2.6	2.8	2.9	3.0	2.8	2.7	2.7	2.7	2.7	2.7	2.7	2.8	2.8	2.7	2.6
2.8	2.7	2.8	2.9	2.7	2.4	2.3	2.2	2.1	2.0	2.7	3.3	4.5	4.9	5.6	4.8	2.9	2.7	2.7	2.5	2.5	2.2	2.0	2.1	2.1	2.2	2.2	2.4	2.5	2.5	2.7	2.6	2.9	3.2	3.3	3.1
3.6	3.6	4.0	4.4	4.5	4.2	3.8	3.3	2.9	2.1	2.0	3.1	3.2	5.4	5.1	4.4	4.2	3.3	2.8	2.5	2.5	2.6	2.3	2.1	2.1	2.2	2.1	2.3	2.4	2.4	2.9	4.2	4.5	4.1	4.3	3.9
3.0	3.9	3.9	3.5	3.9	4.2	4.4	4.8	4.1	3.3	3.3	3.4	2.9	2.9	3.7	5.2	5.0	3.6	3.2	3.2	3.2	2.7	2.6	2.3	2.2	2.5	3.1	3.1	2.5	2.2	2.5	3.5	2.9	2.7	2.7	2.8
3.0	3.3	4.3	4.1	3.5	3.3	3.5	3.9	4.1	3.8	4.0	3.7	3.7	4.0	4.3	4.8	4.2	4.4	5.0	4.6	3.8	3.0	2.9	2.9	2.8	2.8	3.8	4.4	3.5	2.8	2.8	3.3	2.6	2.7	2.9	3.1
3.5	3.3	3.7	3.7	3.5	3.9	4.7	4.1	4.0	4.5	4.4	4.3	4.2	4.5	4.1	4.8	4.4	4.5	4.6	4.0	4.6	4.4	4.2	3.4	3.7	6.1	4.3	3.4	3.5	3.0	2.9	3.6	3.9	3.6	3.6	3.6
4.5	4.7	4.9	4.9	4.4	5.1	5.3	5.2	5.1	5.1	5.0	4.3	4.5	4.7	4.2	4.8	4.7	5.1	4.6	3.9	3.9	4.6	4.3	4.8	4.9	5.1	6.1	5.6	4.5	4.4	4.5	4.6	4.4	4.5	4.5	4.8
3.4	4.5	6.0	5.7	5.8	5.3	5.6	5.3	4.0	4.3	4.8	4.5	5.2	5.8	5.9	5.9	5.3	4.3	4.2	4.0	4.4	4.4	4.8	4.7	4.8	5.3	5.5	4.4	3.5	3.6	4.1	5.7	5.8	5.2	3.3	3.0
5.7	5.0	4.8	4.6	4.2	4.4	4.9	4.0	3.8	3.9	3.9	3.5	3.2	3.4	3.7	4.0	3.3	3.5	4.4	4.4	4.3	4.0	3.7	5.1	5.4	4.2	3.1	3.9	4.6	4.2	4.1	3.7	4.2	5.0	5.2	5.9
4.0	4.6	4.9	5.0	4.6	4.2	3.9	3.3	3.2	3.9	3.5	2.3	3.6	4.6	4.7	4.3	3.2	3.2	3.7	3.2	2.9	3.8	3.8	3.3	3.3	3.9	3.5	3.0	2.9	2.8	2.5	2.0	1.9	2.3	2.6	3.3
4.0	4.2	3.7	4.4	5.1	3.9	3.7	3.6	3.2	4.8	6.2	4.3	3.0	3.4	4.5	3.9	3.2	3.2	3.9	3.2	4.8	4.7	3.6	4.5	4.7	5.2	4.8	5.1	5.0	4.8	5.1	4.7	4.5	4.8	3.9	3.4
5.3	5.2	5.3	4.1	5.1	4.2	3.7	3.5	3.5	4.8	5.5	4.6	4.9	5.7	5.0	5.6	5.3	4.2	3.6	5.6	4.7	5.4	5.7	5.2	4.4	4.7	4.2	4.3	4.8	4.9	5.4	6.6	6.4	6.3	5.2	4.6
5.1	4.5	5.0	4.9	4.8	4.5	4.1	3.9	3.7	4.0	4.8	4.8	5.1	5.2	5.3	5.3	4.7	4.6	4.3	4.4	4.3	4.6	5.1	5.2	4.5	4.5	4.5	4.4	4.3	4.5	4.7	4.9	5.1	4.8	4.9	4.7
4.1	3.8	3.7	3.5	3.6	3.9	4.0	3.8	3.5	3.4	3.5	3.8	3.7	3.7	3.7	3.9	3.9	3.8	4.4	4.0	3.6	3.5	3.8	4.2	4.0	3.8	3.7	3.5	3.2	3.2	3.6	3.5	3.9	4.2	4.3	4.2
2.9	2.9	2.6	2.7	2.7	2.7	3.1	3.3	3.2	2.8	2.4	2.4	2.4	2.5	2.7	3.1	2.9	2.9	3.4	3.3	2.6	2.4	2.3	2.4	2.7	3.0	2.5	2.7	2.6	2.4	2.3	2.7	2.9	2.9	3.1	3.2
2.1	2.0	2.1	2.2	2.5	2.4	2.5	2.7	2.4	2.2	2.1	2.3	2.2	2.1	2.2	2.5	2.5	2.4	2.3	2.4	2.2	2.2	2.2	2.5	2.2	1.9	2.3	2.6	2.6	2.6	2.9	3.2	2.8	2.5	2.3	2.2
2.3	2.4	2.3	2.3	2.3	2.5	2.6	2.7	2.9	2.8	2.4	2.3	2.0	2.0	2.1	2.3	2.7	3.2	3.5	4.0	4.8	4.4	3.5	3.1	4.2	4.0	3.1	3.1	3.4	3.2	3.1	3.2	3.1	2.8	2.6	2.1
3.7	3.6	3.6	3.5	3.4	3.3	3.0	2.6	2.4	3.0	3.6	3.6	3.5	3.5	3.3	2.9	2.7	2.6	2.5	2.4	2.4	2.4	2.5	2.7	2.9	3.2	3.4	3.4	3.3	3.2	3.0	2.9	2.9	3.0	3.4	3.6

Figure 32. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



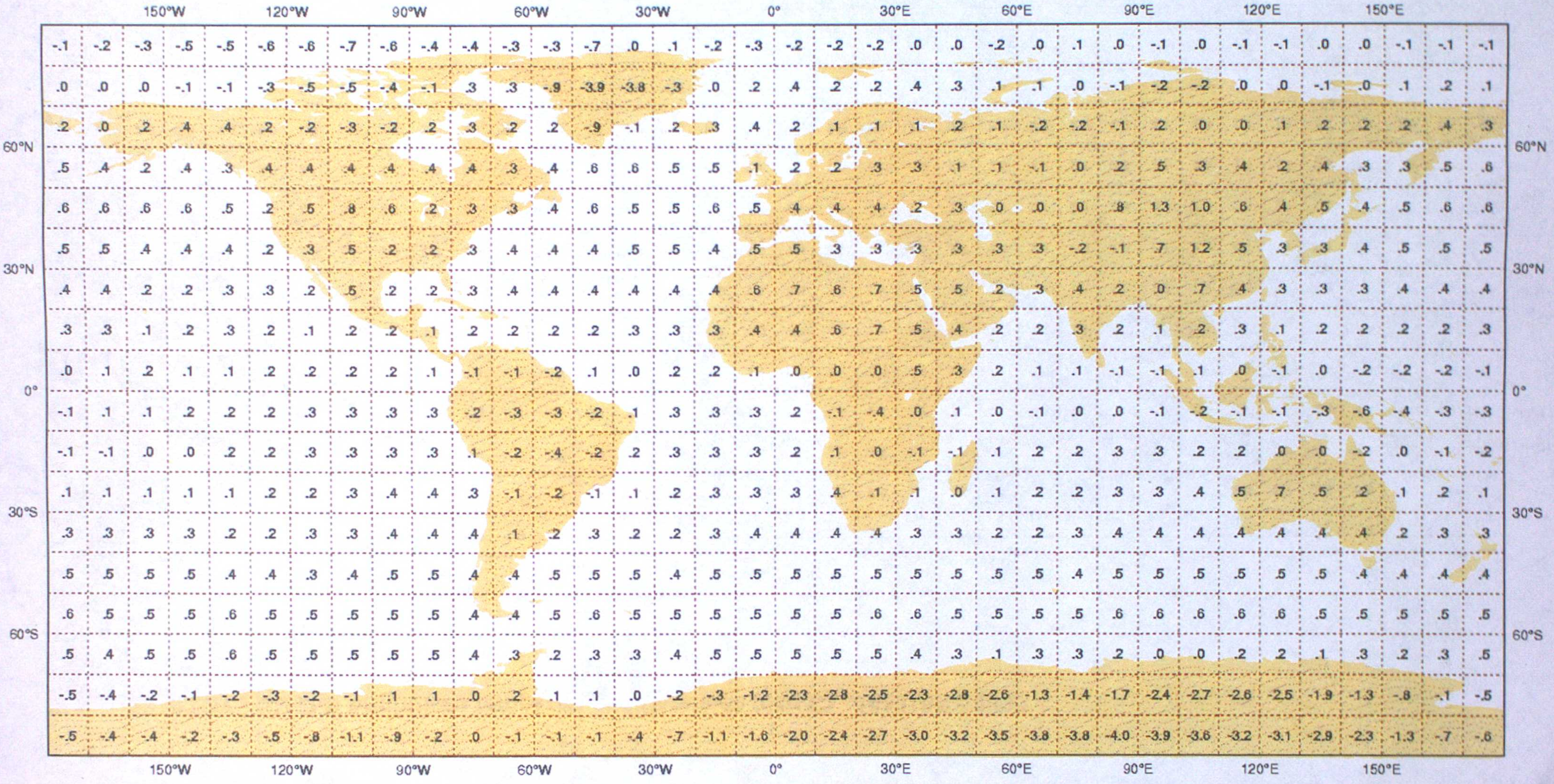
12.6	12.7	12.9	13.2	13.4	13.6	13.8	14.1	14.3	14.7	14.8	14.7	14.5	14.5	14.4	14.2	13.9	13.8	13.6	13.5	13.4	13.4	13.3	13.3	13.3	13.2	13.2	13.2	13.0	12.9	12.7	12.5	12.4	12.4	12.4	12.5
8.8	9.2	9.7	10.4	11.1	11.7	12.4	12.9	13.4	13.8	13.7	13.6	13.6	13.4	12.8	12.7	12.2	11.8	11.7	11.7	11.7	11.8	11.8	11.7	11.5	11.3	11.0	10.6	10.3	9.9	9.5	9.0	8.7	8.4	8.5	8.5
3.2	4.0	4.7	5.8	7.2	8.3	9.2	10.2	10.9	11.2	11.1	10.7	10.2	9.7	9.0	8.9	8.6	8.4	8.7	8.9	9.2	9.6	9.8	9.4	8.7	7.9	7.0	6.0	5.6	4.9	3.5	2.5	2.7	2.6	2.2	2.5
-1.4	-.3	1.1	2.3	3.4	4.5	5.6	6.4	6.6	6.6	6.0	5.2	4.5	3.9	3.9	4.2	4.5	4.8	5.3	5.8	6.3	6.6	6.4	5.7	4.7	3.7	2.7	1.9	1.1	.2	-.8	-1.7	-2.4	-2.5	-2.4	-2.1
-2.7	-1.9	-.5	.4	1.2	1.8	2.7	2.8	2.5	2.3	1.6	1.0	.6	.5	.8	1.2	1.8	2.3	2.5	2.9	3.1	3.2	2.8	2.2	1.5	1.1	.7	.3	-.4	-1.2	-2.1	-2.9	-3.5	-3.5	-3.3	-3.1
-1.6	-1.4	-.5	.1	.5	.5	.8	.6	.4	.3	-.1	-.2	-.3	-.4	-.2	.0	.4	.7	.7	.7	.6	.8	.6	.4	.4	.5	.6	.2	-.4	-.8	-1.2	-1.7	-2.1	-2.2	-1.8	-1.7
-1.3	-1.2	-.9	-.4	-.2	-.3	-.3	-.5	-.6	-.7	-.8	-.8	-.8	-.7	-.6	-.5	-.2	-.1	-.3	-.5	-.8	-.8	-.8	-.7	-.6	-.7	-.7	-1.0	-1.4	-1.4	-1.6	-2.0	-2.0	-2.1	-1.9	-1.7
-2.3	-2.0	-2.0	-1.5	-1.4	-1.2	-1.2	-1.4	-1.4	-1.6	-1.6	-1.6	-1.6	-1.4	-1.3	-1.2	-1.0	-1.1	-1.3	-1.5	-1.4	-1.7	-1.6	-1.8	-1.7	-1.6	-1.7	-1.6	-2.0	-1.9	-2.1	-2.2	-2.2	-2.5	-2.4	-2.4
-2.5	-2.3	-2.4	-2.1	-2.0	-1.7	-1.7	-1.8	-1.7	-2.0	-1.8	-1.8	-1.8	-1.6	-1.6	-1.5	-1.6	-1.7	-1.7	-1.8	-1.6	-1.8	-1.8	-1.9	-1.6	-1.7	-1.8	-1.7	-2.0	-1.8	-1.9	-2.1	-2.1	-2.3	-2.4	-2.5
-2.5	-2.2	-2.4	-2.1	-2.0	-1.8	-1.9	-1.9	-1.8	-2.1	-1.8	-1.9	-1.9	-1.7	-1.7	-1.6	-1.9	-1.9	-1.8	-1.8	-1.5	-1.8	-1.7	-1.7	-1.6	-1.7	-1.9	-1.8	-1.9	-1.8	-2.0	-2.1	-2.1	-2.3	-2.4	-2.5
-2.6	-2.3	-2.3	-2.0	-1.6	-1.5	-1.5	-1.4	-1.6	-2.2	-2.2	-2.4	-2.3	-2.0	-1.9	-1.8	-1.9	-2.1	-2.2	-2.3	-2.1	-2.3	-2.1	-2.1	-2.0	-2.0	-2.4	-2.4	-2.5	-2.6	-2.7	-2.8	-2.9	-2.9	-2.9	-2.7
-2.7	-2.6	-2.5	-2.2	-1.7	-1.5	-1.4	-1.2	-1.5	-2.2	-2.7	-2.9	-3.0	-2.6	-2.4	-2.1	-2.0	-2.2	-2.5	-2.7	-2.5	-2.7	-2.7	-2.5	-2.3	-2.2	-2.2	-2.4	-2.5	-2.7	-2.9	-3.0	-3.2	-3.3	-3.1	-2.8
-2.7	-2.8	-2.6	-2.6	-2.4	-2.2	-1.9	-1.8	-2.0	-2.4	-2.8	-2.9	-3.0	-3.0	-2.8	-2.7	-2.6	-2.6	-2.6	-2.6	-2.7	-2.7	-2.8	-2.9	-2.8	-2.5	-2.4	-2.5	-2.5	-2.6	-2.7	-2.7	-2.9	-2.8	-2.9	-2.8
-3.6	-3.7	-3.7	-4.0	-3.9	-3.6	-3.3	-3.2	-3.4	-3.5	-3.8	-3.9	-4.0	-4.1	-3.9	-3.9	-3.9	-3.8	-3.7	-3.6	-3.8	-3.9	-4.0	-4.0	-3.9	-3.8	-3.7	-4.0	-4.0	-4.1	-4.2	-4.1	-4.0	-3.8	-3.6	-3.5
-5.9	-6.2	-6.4	-6.5	-6.5	-6.3	-6.0	-5.8	-5.9	-6.1	-6.3	-6.4	-6.4	-6.3	-6.2	-6.2	-6.1	-5.9	-6.0	-6.1	-6.3	-6.5	-6.6	-6.6	-6.6	-6.7	-6.8	-6.9	-6.9	-6.7	-6.6	-6.4	-6.1	-5.8	-5.6	-5.7
-8.6	-8.8	-8.8	-8.6	-8.3	-8.1	-7.9	-7.9	-8.2	-8.5	-8.6	-8.5	-8.5	-8.4	-8.3	-8.2	-8.2	-8.1	-8.2	-8.2	-8.3	-8.3	-8.3	-8.2	-8.4	-8.5	-8.5	-8.4	-8.3	-8.2	-8.0	-8.0	-8.0	-8.1	-8.2	-8.4
-9.6	-9.6	-9.4	-9.2	-8.9	-8.7	-8.7	-8.8	-9.0	-9.3	-9.5	-9.5	-9.5	-9.5	-9.5	-9.4	-9.2	-9.0	-8.8	-8.6	-8.5	-8.4	-8.3	-8.3	-8.5	-8.4	-8.2	-8.2	-8.2	-8.4	-8.5	-8.7	-9.0	-9.2	-9.4	-9.6
-9.7	-9.7	-9.7	-9.6	-9.5	-9.5	-9.4	-9.4	-9.5	-9.7	-9.8	-9.9	-10.0	-9.9	-9.9	-9.8	-9.7	-9.5	-9.4	-9.2	-9.1	-8.9	-8.7	-8.7	-8.6	-8.6	-8.6	-8.7	-8.9	-9.1	-9.3	-9.4	-9.6	-9.6	-9.7	-9.8

Figure 33. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS4 (400 hPa)
NOAA15, using all observations



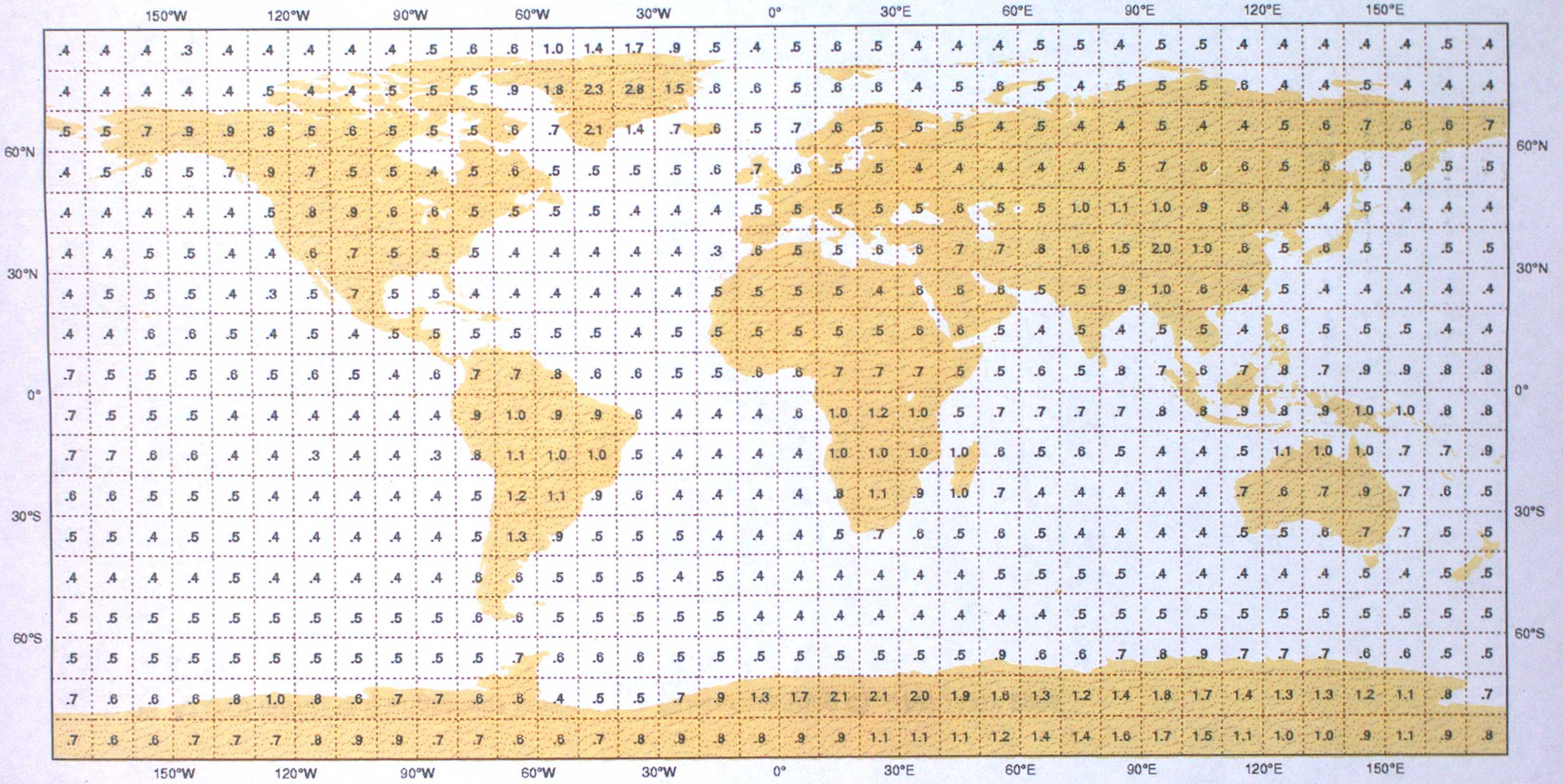
2.9	2.9	2.9	2.8	2.7	2.6	2.4	2.3	2.1	2.0	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.2	2.3	2.4	2.5	2.6	2.7	2.8	2.9
3.6	3.7	3.6	3.6	3.5	3.2	2.9	2.5	2.1	1.6	1.5	1.6	1.8	2.1	2.2	2.3	2.3	2.2	2.1	2.1	2.0	1.9	2.0	2.0	2.0	2.0	2.1	2.2	2.5	2.6	2.7	2.9	3.0	3.1	3.2	3.4
4.0	4.0	3.7	3.6	3.8	3.6	3.5	3.0	2.6	2.2	2.0	2.3	2.7	3.0	3.0	3.0	2.9	2.6	2.5	2.5	2.5	2.8	3.1	3.2	3.2	3.1	2.9	2.9	3.1	3.2	3.2	3.3	3.5	3.5	3.5	3.7
2.5	2.8	3.0	3.1	3.1	3.1	3.1	2.7	2.3	2.3	2.4	2.7	3.1	3.1	2.9	2.9	2.8	2.7	2.6	2.5	2.4	2.7	3.1	3.2	3.0	2.7	2.2	2.1	2.4	2.5	2.5	2.4	2.3	2.2	2.2	2.3
1.4	1.9	2.2	2.4	2.3	2.1	2.0	1.8	1.6	1.8	1.9	2.1	2.2	2.2	2.2	2.1	2.2	2.2	2.2	2.1	2.0	1.9	2.0	2.0	1.8	1.4	1.2	1.3	1.4	1.4	1.6	1.8	1.7	1.4	1.2	1.3
1.6	1.5	1.6	1.8	1.7	1.6	1.6	1.5	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.5	1.4	1.3	1.3	1.2	1.2	1.1	1.0	1.1	1.1	1.1	1.2	1.5	1.4	1.3	1.5
1.9	1.9	1.8	1.9	1.8	1.8	1.7	1.8	1.9	1.8	1.8	1.7	1.7	1.7	1.7	1.6	1.5	1.5	1.6	1.7	1.7	1.7	1.6	1.7	1.7	1.7	1.7	1.7	1.9	1.8	1.8	1.9	2.0	1.9	2.0	2.0
2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.0	2.0	1.9	2.0	1.9	1.9	1.9	1.9	1.9	2.0	2.1	2.0	2.0	2.0	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1
2.2	2.2	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.1	2.0	2.0	2.1	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.2	2.1	2.2	2.1
2.1	2.2	2.1	2.1	2.1	2.2	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.1	2.1	2.1	2.0	2.1	2.0	2.1	2.0	2.1	2.1	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
2.1	2.1	2.0	2.0	2.0	2.0	1.9	1.9	2.0	2.0	2.1	2.1	2.1	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.0	2.0	2.0	2.0	2.0	2.0	2.1	2.0	2.1	2.1	2.1	2.1	2.1	2.1	2.1
1.9	2.0	1.9	1.8	1.8	1.8	1.7	1.6	1.7	1.8	1.9	1.9	2.0	2.0	1.9	1.9	1.8	1.9	1.9	2.0	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.9	1.8	1.9	1.9	1.9	2.0	2.0	1.9	1.8
1.6	1.6	1.5	1.4	1.5	1.5	1.5	1.5	1.4	1.5	1.6	1.5	1.6	1.6	1.6	1.6	1.6	1.6	1.5	1.6	1.6	1.5	1.5	1.7	1.6	1.6	1.6	1.6	1.5	1.5	1.5	1.5	1.5	1.6	1.5	1.5
1.2	1.2	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.4	1.4	1.3	1.3	1.3	1.3	1.2	1.2	1.2	1.3	1.4	1.4	1.4	1.3	1.3	1.4	1.3	1.4	1.3	1.3	1.3	1.2	1.2
1.3	1.3	1.3	1.2	1.3	1.3	1.3	1.3	1.3	1.4	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.3	1.3	1.3	1.2	1.1	1.0	1.0	1.1	1.2	1.3	1.2	1.1	1.1	1.1	1.3	1.4	1.4	1.3	1.3
1.2	1.2	1.1	1.0	.9	1.0	1.0	.9	.9	1.0	1.0	.9	.9	1.1	1.2	1.1	1.2	1.1	1.1	1.0	.9	.8	.8	.8	.8	.9	.9	.9	.8	.7	.7	.7	.9	1.0	1.1	1.2
1.0	1.0	.9	.8	.7	.8	.7	.7	.6	.7	.7	.7	.8	.8	.7	.6	.6	.6	.7	.7	.8	.8	.8	.8	.8	.8	.8	.9	.9	.9	.9	.9	.9	.8	.9	.9
.7	.7	.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.9	.9	1.0	1.0	1.1	1.1	1.1	1.1	1.0	.9	.9	.8	.8	.7	.7	.7

Figure 34. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



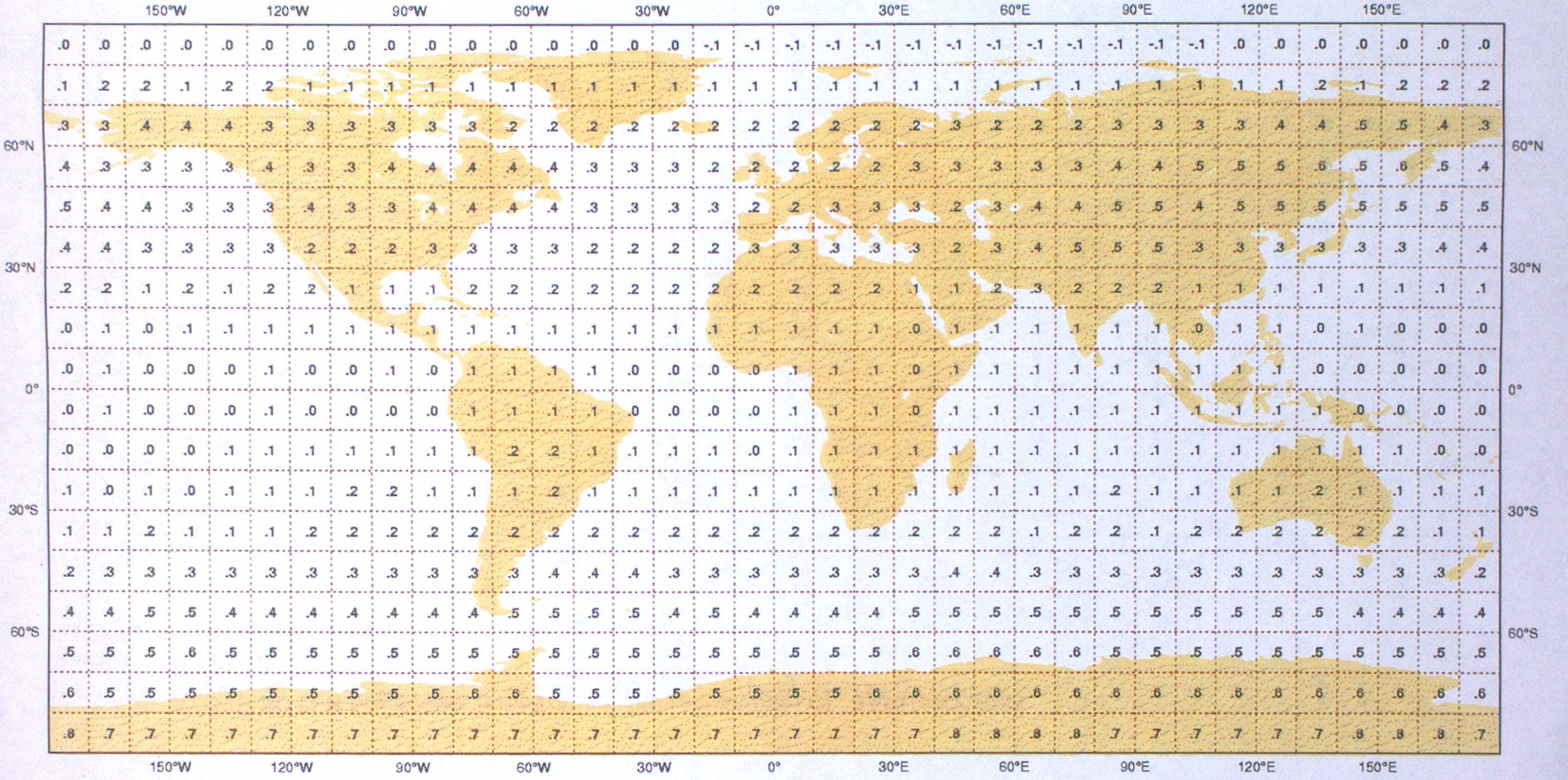
-.1	-.2	-.3	-.5	-.5	-.6	-.6	-.7	-.6	-.4	-.4	-.3	-.3	-.7	.0	.1	-.2	-.3	-.2	-.2	-.2	.0	.0	-.2	.0	.1	.0	-.1	.0	-.1	-.1	.0	.0	-.1	-.1	-.1
.0	.0	.0	-.1	-.1	-.3	-.5	-.5	-.4	-.1	.3	.3	-.9	-3.9	-3.8	-.3	.0	.2	.4	.2	.2	.4	.3	.1	.1	.0	-.1	-.2	-.2	.0	.0	-.1	.0	.1	.2	.1
.2	.0	.2	.4	.4	.2	-.2	-.3	-.2	.2	.3	.2	.2	-.9	-.1	.2	.3	.4	.2	.1	.1	.1	.2	.1	-.2	-.2	-.1	.2	.0	.0	.1	.2	.2	.2	.4	.3
.5	.4	.2	.4	.3	.4	.4	.4	.4	.4	.4	.3	.4	.6	.6	.5	.5	.1	.2	.2	.3	.3	.1	.1	-.1	.0	.2	.5	.3	.4	.2	.4	.3	.3	.5	.6
.6	.6	.6	.6	.5	.2	.5	.8	.6	.2	.3	.3	.4	.6	.5	.5	.6	.5	.4	.4	.4	.2	.3	.0	.0	.0	.8	1.3	1.0	.6	.4	.5	.4	.5	.6	.6
.5	.5	.4	.4	.4	.2	.3	.5	.2	.2	.3	.4	.4	.4	.5	.5	.4	.5	.5	.3	.3	.3	.3	.3	.3	-.2	-.1	.7	1.2	.5	.3	.3	.4	.5	.5	.5
.4	.4	.2	.2	.3	.3	.2	.5	.2	.2	.3	.4	.4	.4	.4	.4	.4	.6	.7	.6	.7	.5	.5	.2	.3	.4	.2	.0	.7	.4	.3	.3	.3	.4	.4	.4
.3	.3	.1	.2	.3	.2	.1	.2	.2	.1	.2	.2	.2	.2	.3	.3	.3	.4	.4	.6	.7	.5	.4	.2	.2	.3	.2	.1	.2	.3	.1	.2	.2	.2	.2	.3
.0	.1	.2	.1	.1	.2	.2	.2	.2	.1	-.1	-.1	-.2	.1	.0	.2	.2	.1	.0	.0	.0	.5	.3	.2	.1	.1	-.1	-.1	.1	.0	-.1	.0	-.2	-.2	-.2	-.1
-.1	.1	.1	.2	.2	.2	.3	.3	.3	.3	-.2	-.3	-.3	-.2	.1	.3	.3	.3	.2	-.1	-.4	.0	.1	.0	-.1	.0	.0	-.1	-.2	-.1	-.1	-.3	-.6	-.4	-.3	-.3
-.1	-.1	.0	.0	.2	.2	.3	.3	.3	.3	.1	-.2	-.4	-.2	.2	.3	.3	.3	.2	.1	.0	-.1	-.1	.1	.2	.2	.3	.3	.2	.2	.0	.0	-.2	.0	-.1	-.2
.1	.1	.1	.1	.1	.2	.2	.3	.4	.4	.3	-.1	-.2	-.1	.1	.2	.3	.3	.3	.4	.1	.1	.0	.1	.2	.2	.3	.3	.4	.5	.7	.5	.2	.1	.2	.1
.3	.3	.3	.3	.2	.2	.3	.3	.4	.4	.4	.1	.2	.3	.2	.2	.3	.4	.4	.4	.4	.3	.3	.2	.2	.3	.4	.4	.4	.4	.4	.4	.4	.2	.3	.3
.5	.5	.5	.5	.4	.4	.3	.4	.5	.5	.4	.4	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4
.6	.5	.5	.5	.6	.5	.5	.5	.5	.5	.4	.4	.5	.6	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5
.5	.4	.5	.5	.6	.5	.5	.5	.5	.5	.4	.3	.2	.3	.3	.4	.5	.5	.5	.5	.5	.4	.3	.1	.3	.3	.2	.0	.0	.2	.2	.1	.3	.2	.3	.5
-.5	-.4	-.2	-.1	-.2	-.3	-.2	-.1	.1	.1	.0	.2	.1	.1	.0	-.2	-.3	-1.2	-2.3	-2.8	-2.5	-2.3	-2.8	-2.6	-1.3	-1.4	-1.7	-2.4	-2.7	-2.6	-2.5	-1.9	-1.3	-.8	-.1	-.5
-.5	-.4	-.4	-.2	-.3	-.5	-.8	-1.1	-.9	-.2	.0	-.1	-.1	-.1	-.4	-.7	-1.1	-1.6	-2.0	-2.4	-2.7	-3.0	-3.2	-3.5	-3.8	-3.8	-4.0	-3.9	-3.6	-3.2	-3.1	-2.9	-2.3	-1.3	-.7	-.6

Figure 35. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA15, using all observations



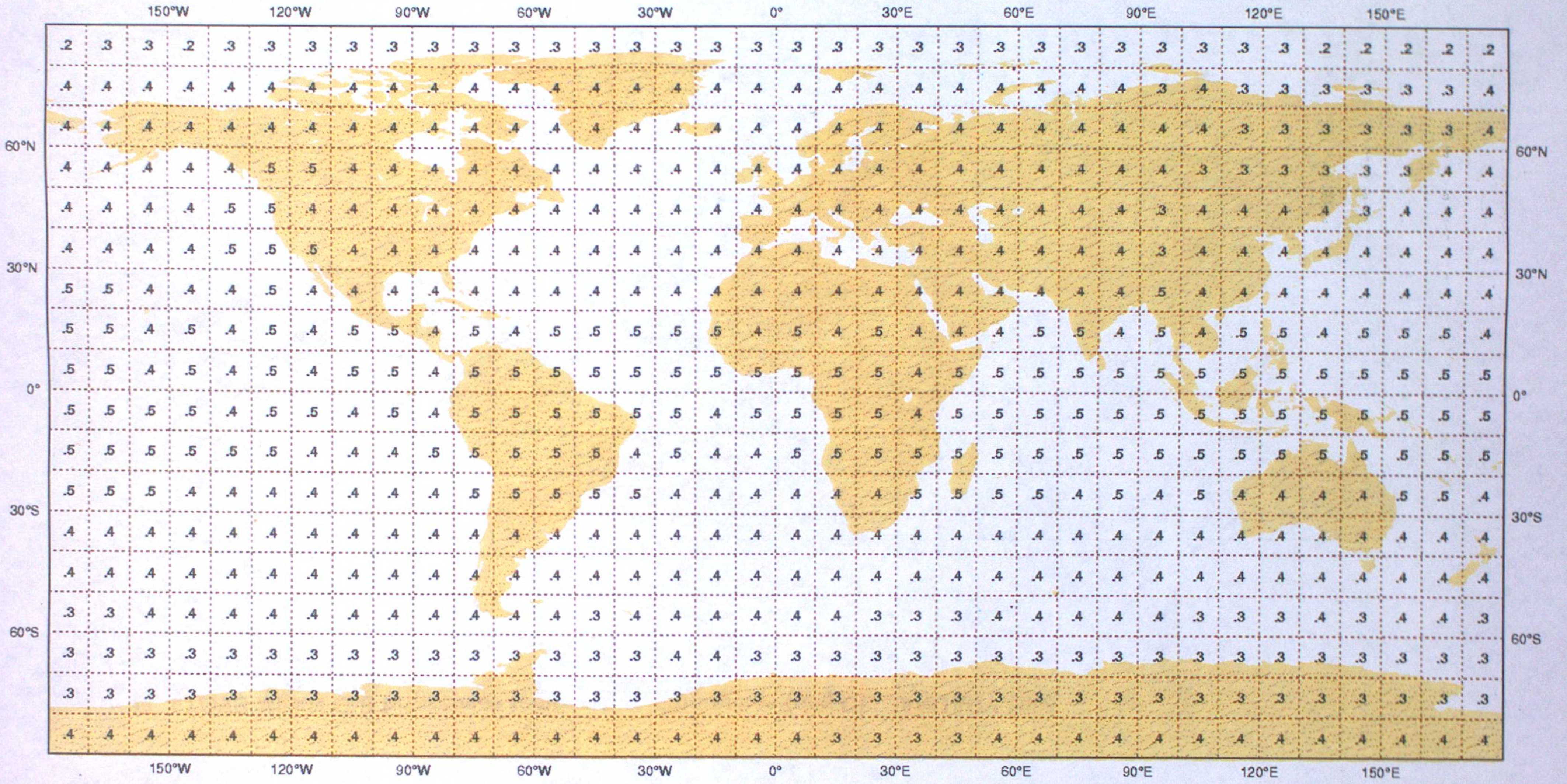
.4	.4	.4	.3	.4	.4	.4	.4	.4	.5	.6	.6	1.0	1.4	1.7	.9	.5	.4	.5	.6	.5	.4	.4	.4	.5	.5	.4	.5	.5	.4	.4	.4	.4	.4	.5	.4
.4	.4	.4	.4	.4	.5	.4	.4	.5	.5	.5	.9	1.8	2.3	2.8	1.5	.6	.6	.5	.6	.6	.4	.5	.6	.5	.4	.5	.5	.5	.6	.4	.4	.5	.4	.4	.4
.5	.5	.7	.9	.9	.8	.5	.6	.5	.5	.5	.6	.7	2.1	1.4	.7	.6	.5	.7	.6	.5	.5	.5	.4	.5	.4	.4	.5	.4	.4	.5	.6	.7	.6	.6	.7
.4	.5	.6	.5	.7	.9	.7	.5	.5	.4	.5	.6	.5	.5	.5	.5	.6	.7	.6	.5	.5	.4	.4	.4	.4	.4	.5	.7	.6	.6	.5	.6	.6	.6	.5	.5
.4	.4	.4	.4	.4	.5	.8	.9	.6	.6	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.6	.5	.5	1.0	1.1	1.0	.9	.6	.4	.4	.5	.4	.4	.4
.4	.4	.5	.5	.4	.4	.6	.7	.5	.5	.5	.4	.4	.4	.4	.4	.3	.6	.5	.5	.6	.6	.7	.7	.8	1.6	1.5	2.0	1.0	.6	.5	.6	.5	.5	.5	.5
.4	.5	.5	.5	.4	.3	.5	.7	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.6	.6	.6	.5	.5	.9	1.0	.6	.4	.5	.4	.4	.4	.4	.4
.4	.4	.6	.6	.5	.4	.5	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.6	.6	.5	.4	.5	.4	.5	.5	.4	.6	.5	.5	.5	.4	.4
.7	.5	.5	.5	.6	.5	.6	.5	.4	.6	.7	.7	.8	.6	.6	.5	.5	.6	.6	.7	.7	.7	.5	.5	.6	.5	.8	.7	.6	.7	.8	.7	.9	.9	.8	.8
.7	.5	.5	.5	.4	.4	.4	.4	.4	.4	.9	1.0	.9	.9	.6	.4	.4	.4	.6	1.0	1.2	1.0	.5	.7	.7	.7	.7	.8	.8	.9	.8	.9	1.0	1.0	.8	.8
.7	.7	.6	.6	.4	.4	.3	.4	.4	.3	.8	1.1	1.0	1.0	.5	.4	.4	.4	.4	1.0	1.0	1.0	1.0	.6	.5	.6	.5	.4	.4	.5	1.1	1.0	1.0	.7	.7	.9
.6	.6	.5	.5	.5	.4	.4	.4	.4	.4	.5	1.2	1.1	.9	.6	.4	.4	.4	.4	.8	1.1	.9	1.0	.7	.4	.4	.4	.4	.4	.7	.6	.7	.9	.7	.6	.5
.5	.5	.4	.5	.5	.4	.4	.4	.4	.4	.5	1.3	.9	.5	.5	.5	.4	.4	.4	.5	.7	.6	.5	.6	.5	.4	.4	.4	.4	.5	.5	.6	.7	.7	.5	.5
.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.6	.6	.5	.5	.5	.4	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.4	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.7	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.9	.6	.6	.7	.8	.9	.7	.7	.7	.6	.6	.5	.5
.7	.6	.6	.6	.8	1.0	.8	.6	.7	.7	.6	.6	.4	.5	.5	.7	.9	1.3	1.7	2.1	2.1	2.0	1.9	1.6	1.3	1.2	1.4	1.8	1.7	1.4	1.3	1.3	1.2	1.1	.8	.7
.7	.6	.6	.7	.7	.7	.8	.9	.9	.7	.7	.6	.6	.7	.8	.9	.8	.8	.9	.9	1.1	1.1	1.1	1.2	1.4	1.4	1.6	1.7	1.5	1.1	1.0	1.0	.9	1.1	.9	.8

Figure 36. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations



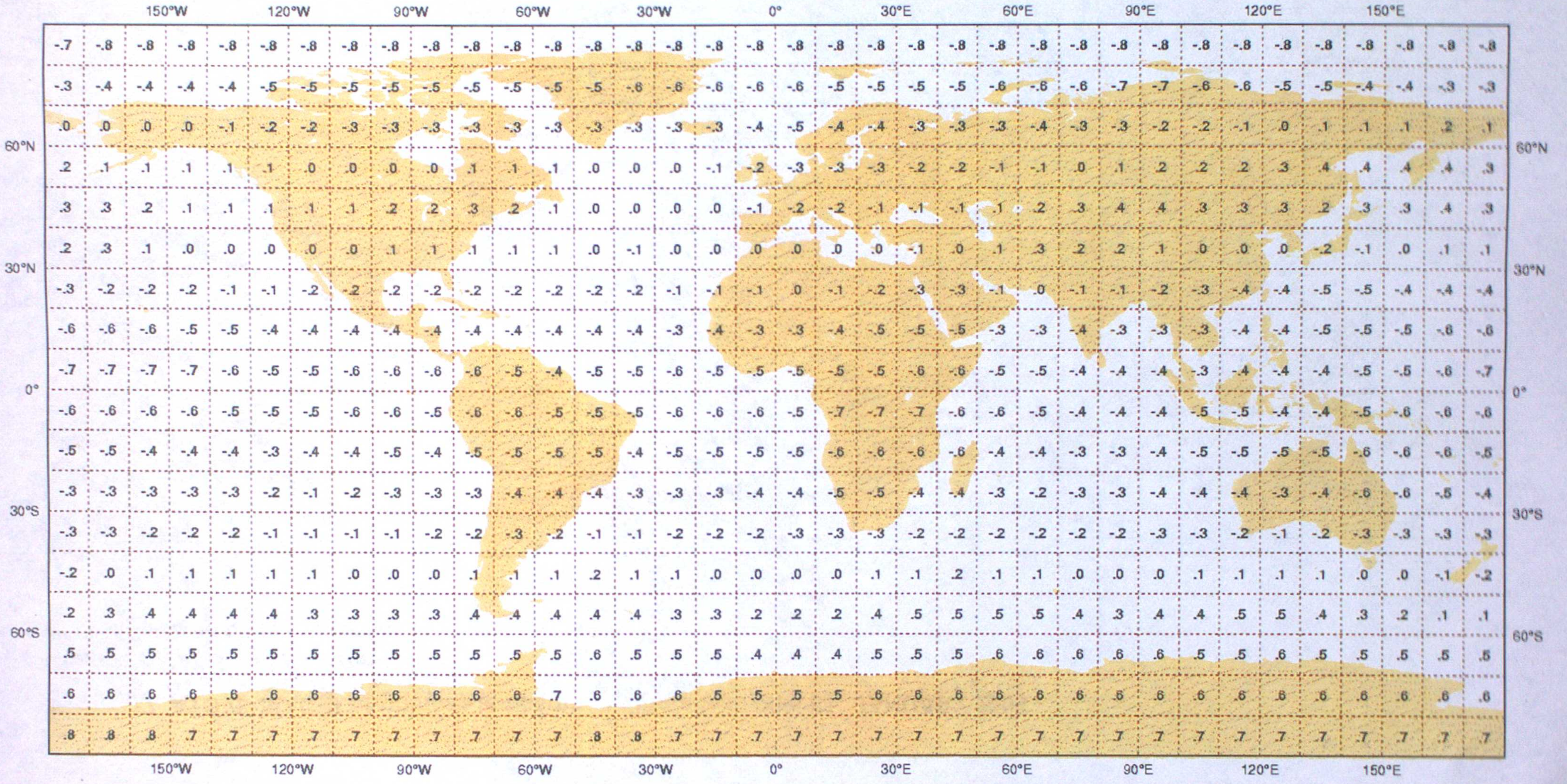
.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	.0	.0	.0	.0	.0
.1	.2	.2	.1	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.2	.2	.2
.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.3	.2	.2	.2	.3	.3	.3	.3	.4	.4	.5	.5	.4	.3
.4	.3	.3	.3	.3	.4	.3	.3	.4	.4	.4	.4	.4	.3	.3	.3	.2	.2	.2	.2	.2	.3	.3	.3	.3	.3	.4	.4	.5	.5	.5	.6	.5	.6	.5	.4
.5	.4	.4	.3	.3	.3	.4	.3	.3	.4	.4	.4	.4	.3	.3	.3	.3	.2	.2	.3	.3	.3	.2	.3	.4	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5
.4	.4	.3	.3	.3	.3	.2	.2	.2	.3	.3	.3	.3	.2	.2	.2	.2	.3	.3	.3	.3	.3	.2	.3	.4	.5	.5	.5	.3	.3	.3	.3	.3	.3	.4	.4
.2	.2	.1	.2	.1	.2	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.1	.2	.3	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1
.0	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.0	.1	.1	.0	.1	.0	.0	.0
.0	.1	.0	.0	.0	.1	.0	.0	.1	.0	.1	.1	.1	.1	.0	.0	.0	.0	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0
.0	.1	.0	.0	.0	.1	.0	.0	.0	.0	.1	.1	.1	.1	.0	.0	.0	.0	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0
.0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.1	.2	.2	.1	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.0
.1	.0	.1	.0	.1	.1	.1	.2	.2	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.2	.1	.1	.1	.1
.1	.1	.2	.1	.1	.1	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.1	.2	.2	.1	.2	.2	.2	.2	.2	.2	.1	.1
.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2
.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.5	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.4
.5	.5	.5	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.6	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.5	.5	.5	.5	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.8	.8	.7	.7	.7	.7	.7	.7	.8	.8	.8	.7

Figure 37. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA15, using all observations



.2	.3	.3	.2	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.2	.2	.2	.2
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.3	.3	.3	.3	.3	.3	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.4
.4	.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.4	.4
.4	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.3	.4	.4	.4
.4	.4	.4	.4	.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.4	.5	.4	.5	.4	.5	.5	.4	.5	.4	.5	.5	.5	.5	.5	.4	.5	.4	.5	.4	.4	.4	.5	.5	.4	.5	.4	.5	.5	.4	.5	.5	.5	.4
.5	.5	.4	.5	.4	.5	.4	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.4	.5	.5	.4	.5	.4	.5	.5	.5	.5	.5	.5	.4	.5	.5	.5	.5	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.4	.5	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.5	.5	.5	.4	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.4	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.5	.4	.5	.4	.4	.4	.4	.5	.5	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.3	.3	.3	.4	.4	.4	.4	.4	.3	.3	.3	.4	.3	.4	.4	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4

Figure 38. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations



-.7	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8	-.8
-.3	-.4	-.4	-.4	-.4	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6	-.6	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.7	-.7	-.6	-.6	-.5	-.5	-.4	-.4	-.3	-.3
.0	.0	.0	.0	-.1	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.5	-.4	-.4	-.3	-.3	-.3	-.4	-.3	-.3	-.2	-.2	-.1	.0	.1	.1	.1	.2	.1
.2	.1	.1	.1	.1	.1	.0	.0	.0	.0	.1	.1	.1	.0	.0	.0	-.1	-.2	-.3	-.3	-.3	-.2	-.2	-.1	-.1	.0	.1	.2	.2	.2	.3	.4	.4	.4	.4	.3
.3	.3	.2	.1	.1	.1	.1	.1	.2	.2	.3	.2	.1	.0	.0	.0	.0	-.1	-.2	-.2	-.1	-.1	-.1	.1	.2	.3	.4	.4	.3	.3	.3	.2	.3	.3	.4	.3
.2	.3	.1	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.0	-.1	.0	.0	.0	.0	.0	.0	-.1	.0	.1	.3	.2	.2	.1	.0	.0	.0	-.2	-.1	.0	.1	.1
-.3	-.2	-.2	-.2	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	.0	-.1	-.2	-.3	-.3	-.1	.0	-.1	-.1	-.2	-.3	-.4	-.4	-.5	-.5	-.4	-.4	-.4
-.6	-.6	-.6	-.5	-.5	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.4	-.3	-.3	-.4	-.5	-.5	-.5	-.3	-.3	-.4	-.3	-.3	-.3	-.4	-.4	-.5	-.5	-.5	-.6	-.6
-.7	-.7	-.7	-.7	-.6	-.5	-.5	-.6	-.6	-.6	-.6	-.5	-.4	-.5	-.5	-.6	-.5	-.5	-.5	-.5	-.5	-.6	-.6	-.5	-.5	-.4	-.4	-.4	-.3	-.4	-.4	-.4	-.5	-.5	-.6	-.7
-.6	-.6	-.6	-.6	-.5	-.5	-.5	-.6	-.6	-.5	-.6	-.6	-.5	-.5	-.5	-.6	-.6	-.6	-.5	-.7	-.7	-.7	-.6	-.6	-.5	-.4	-.4	-.4	-.5	-.5	-.4	-.4	-.5	-.6	-.6	-.6
-.5	-.5	-.4	-.4	-.4	-.3	-.4	-.4	-.5	-.4	-.5	-.5	-.5	-.5	-.4	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.6	-.4	-.4	-.3	-.3	-.4	-.5	-.5	-.5	-.5	-.6	-.6	-.6	-.5
-.3	-.3	-.3	-.3	-.3	-.2	-.1	-.2	-.3	-.3	-.3	-.4	-.4	-.4	-.3	-.3	-.3	-.4	-.4	-.5	-.5	-.4	-.4	-.3	-.2	-.3	-.3	-.4	-.4	-.4	-.3	-.4	-.6	-.6	-.5	-.4
-.3	-.3	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.2	-.2	-.3	-.2	-.1	-.1	-.2	-.2	-.2	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.2	-.1	-.2	-.3	-.3	-.3	-.3
-.2	.0	.1	.1	.1	.1	.1	.0	.0	.0	.1	.1	.1	.2	.1	.1	.0	.0	.0	.0	.1	.1	.2	.1	.1	.0	.0	.0	.1	.1	.1	.1	.0	.0	-.1	-.2
.2	.3	.4	.4	.4	.4	.3	.3	.3	.3	.4	.4	.4	.4	.4	.3	.3	.2	.2	.2	.4	.5	.5	.5	.5	.4	.3	.4	.4	.5	.5	.4	.3	.2	.1	.1
.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.6	.5	.5	.5	.4	.4	.4	.5	.5	.5	.6	.6	.6	.6	.6	.5	.5	.6	.5	.5	.5	.5	.5
.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.7	.6	.6	.6	.5	.5	.5	.5	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6	.6
.8	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7

Figure 39. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA15, using all observations

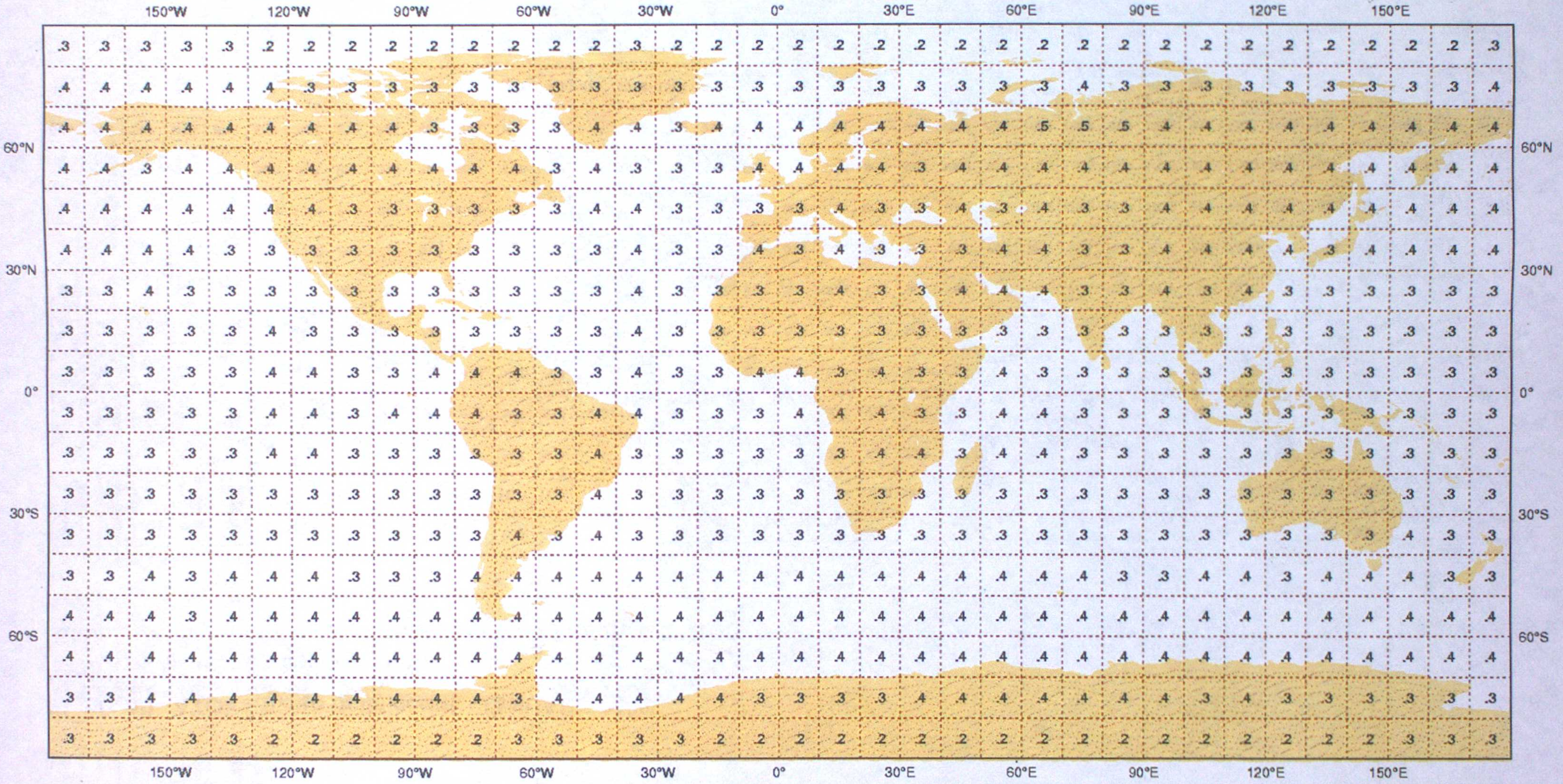
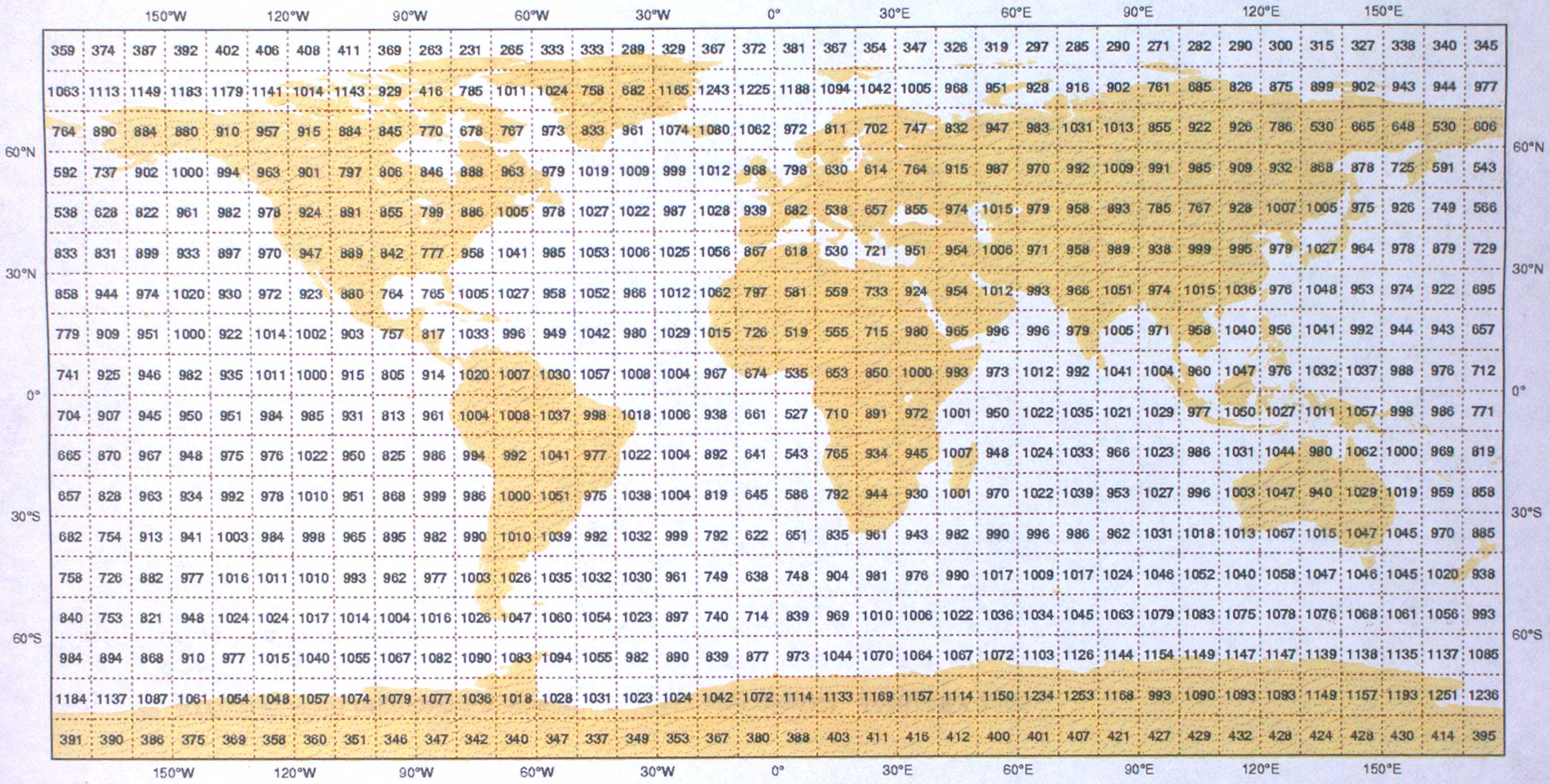
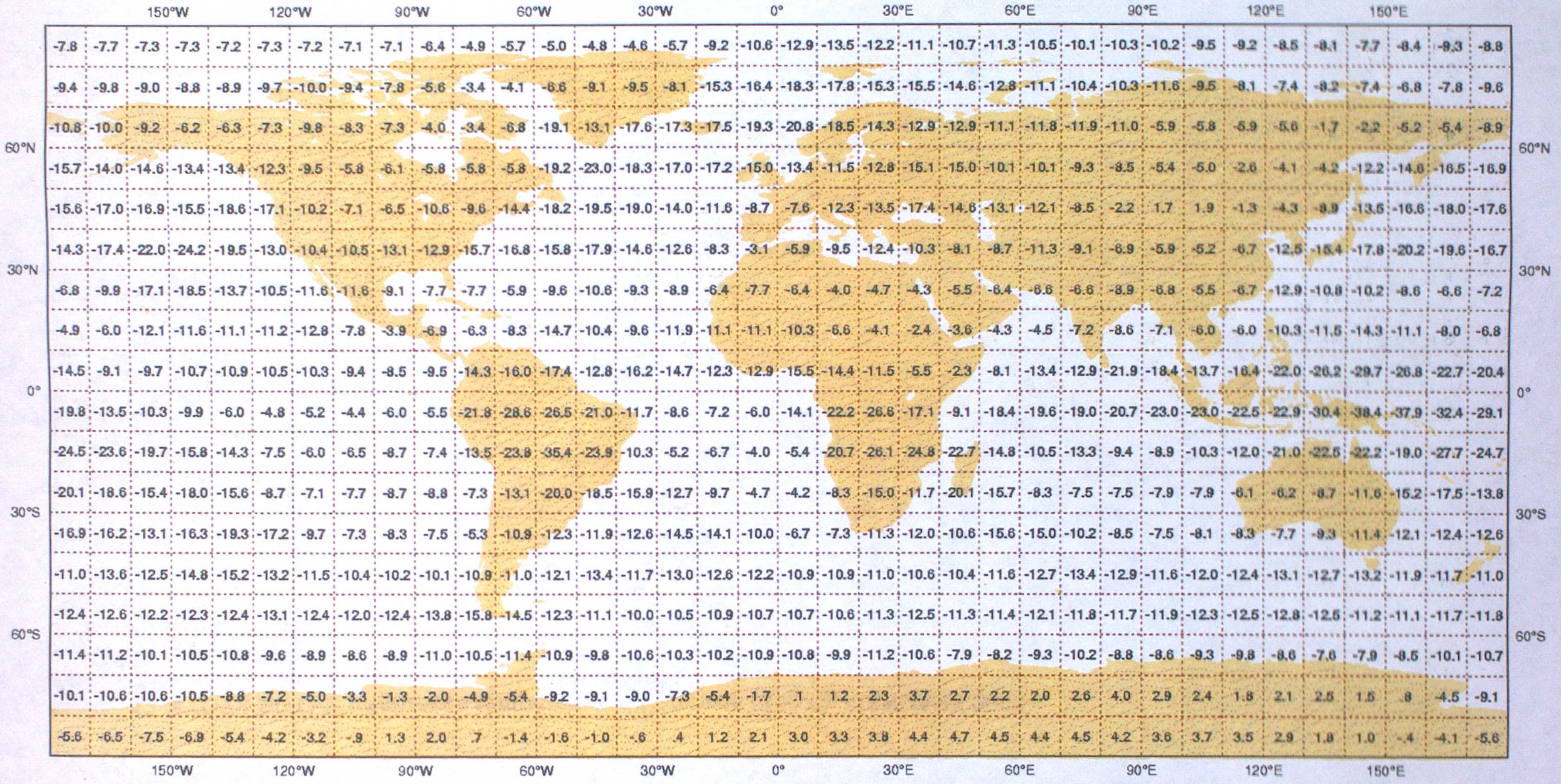

150°W 120°W 90°W 60°W 30°W 0° 30°E 60°E 90°E 120°E 150°E
60°N 30°N 0° 30°S 60°S
.3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3
.4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .5 .5 .5 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .3 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .4 .3 .3 .4 .3 .4 .4 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .4 .3 .4 .3 .3 .3 .4 .4 .4 .3 .3 .4 .4 .4 .4 .3 .4 .4 .4 .4
.3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .4 .3 .3 .4 .4 .4 .4 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .4 .3 .3 .4 .4 .4 .3 .3 .4 .3 .3 .4 .4 .3 .4 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .4 .3 .4 .4 .4 .3 .3 .4 .4 .3 .3 .3 .4 .4 .4 .3 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .4 .4 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .4 .4 .3 .4 .4 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .4 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .3 .4 .3 .3
.3 .3 .4 .3 .4 .4 .4 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .3 .4 .4 .3 .4 .4 .4 .3 .3
.4 .4 .4 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4 .4
.3 .3 .4 .4 .4 .4 .4 .4 .4 .4 .4 .3 .4 .4 .4 .4 .4 .3 .3 .3 .3 .4 .4 .4 .4 .4 .4 .4 .3 .4 .3 .3 .3 .3 .3 .3
.3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .3 .3 .3 .3 .3 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .2 .3 .3 .3

Figure 40. ATOVS mean daily count. JANUARY 2005
NOAA16, using all observations
Global average number of observations in 24 hours = 571092



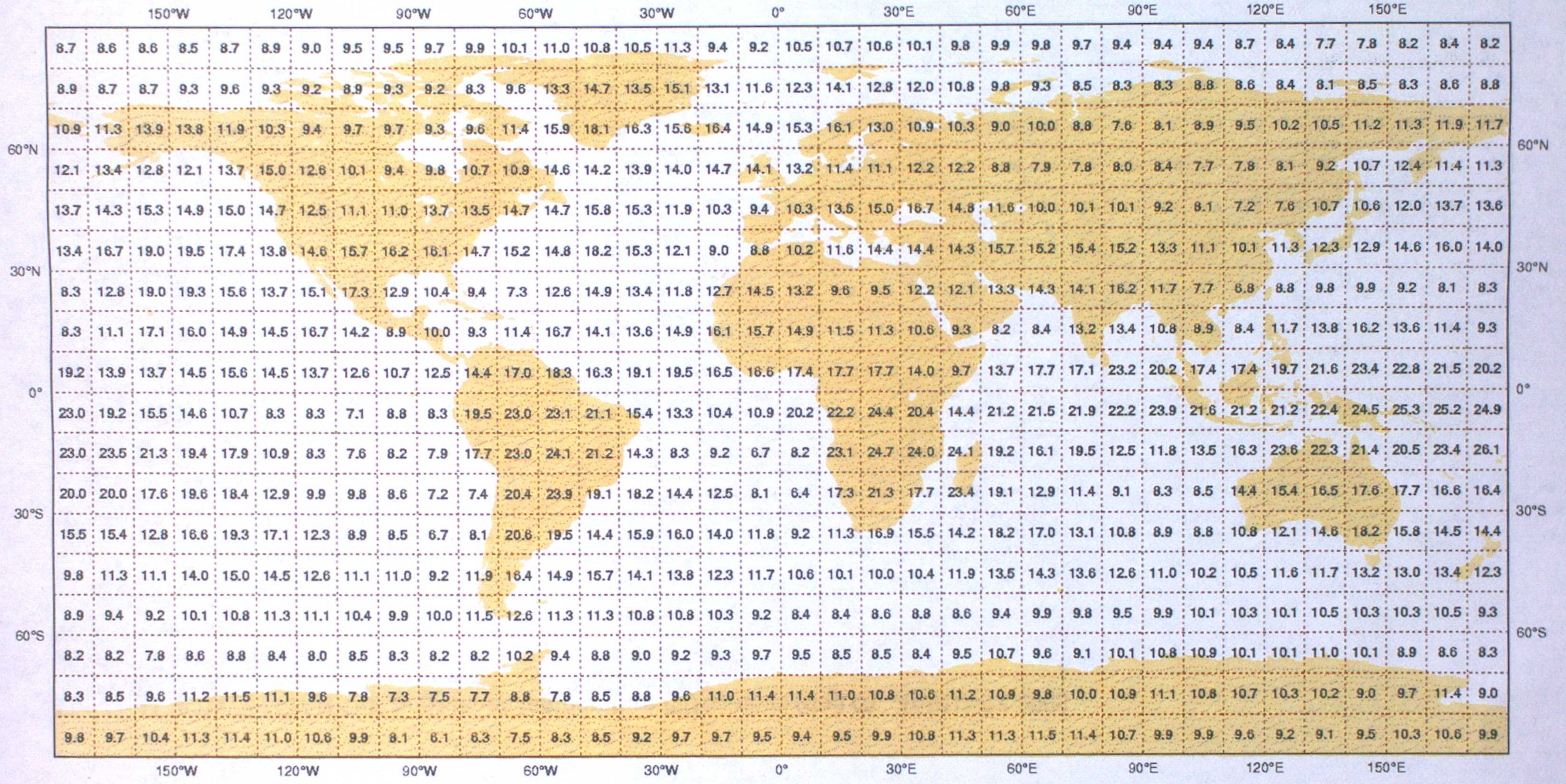
359	374	387	392	402	406	408	411	369	263	231	265	333	333	289	329	367	372	381	367	354	347	326	319	297	285	290	271	282	290	300	315	327	338	340	345
1063	1113	1149	1183	1179	1141	1014	1143	929	416	785	1011	1024	758	682	1165	1243	1225	1188	1094	1042	1005	968	951	928	916	902	761	685	826	875	899	902	943	944	977
764	890	884	880	910	957	915	884	845	770	678	767	973	833	961	1074	1080	1062	972	811	702	747	832	947	983	1031	1013	855	922	926	786	530	665	648	530	606
592	737	902	1000	994	963	901	797	806	846	888	963	979	1019	1009	999	1012	968	798	630	614	764	915	987	970	992	1009	991	985	909	932	868	878	725	591	543
538	628	822	961	982	978	924	891	855	799	886	1005	978	1027	1022	987	1028	939	682	538	657	855	974	1015	979	958	893	785	767	928	1007	1005	975	926	749	566
833	831	899	933	897	970	947	889	842	777	958	1041	985	1053	1006	1025	1056	867	618	530	721	951	954	1006	971	958	989	938	999	995	979	1027	964	978	879	729
858	944	974	1020	930	972	923	880	764	765	1005	1027	958	1052	966	1012	1062	797	581	559	733	924	954	1012	993	966	1051	974	1015	1036	976	1048	953	974	922	695
779	909	951	1000	922	1014	1002	903	757	817	1033	996	949	1042	980	1029	1015	726	519	555	715	980	965	996	996	979	1005	971	958	1040	956	1041	992	944	943	657
741	925	946	982	935	1011	1000	915	805	914	1020	1007	1030	1057	1008	1004	967	674	535	653	850	1000	993	973	1012	992	1041	1004	960	1047	976	1032	1037	988	976	712
704	907	945	950	951	984	985	931	813	961	1004	1008	1037	998	1018	1006	938	661	527	710	891	972	1001	950	1022	1035	1021	1029	977	1050	1027	1011	1057	998	986	771
665	870	967	948	975	976	1022	950	825	986	994	992	1041	977	1022	1004	892	641	543	765	934	945	1007	948	1024	1033	966	1023	986	1031	1044	980	1062	1000	969	819
657	828	963	934	992	978	1010	951	868	999	986	1000	1051	975	1038	1004	819	645	586	792	944	930	1001	970	1022	1039	953	1027	996	1003	1047	940	1029	1019	959	858
682	754	913	941	1003	984	998	965	895	982	990	1010	1039	992	1032	999	792	622	651	835	961	943	982	990	996	986	962	1031	1018	1013	1067	1015	1047	1045	970	885
758	726	882	977	1016	1011	1010	993	962	977	1003	1026	1035	1032	1030	961	749	638	748	904	981	976	990	1017	1009	1017	1024	1046	1052	1040	1058	1047	1046	1045	1020	938
840	753	821	948	1024	1024	1017	1014	1004	1016	1026	1047	1060	1054	1023	897	740	714	839	969	1010	1006	1022	1036	1034	1045	1063	1079	1083	1075	1078	1076	1068	1061	1056	993
984	894	868	910	977	1015	1040	1055	1067	1082	1090	1083	1094	1055	982	890	839	877	973	1044	1070	1064	1067	1072	1103	1126	1144	1154	1149	1147	1147	1139	1138	1135	1137	1085
1184	1137	1087	1061	1054	1048	1057	1074	1079	1077	1036	1018	1028	1031	1023	1024	1042	1072	1114	1133	1169	1157	1114	1150	1234	1253	1168	993	1090	1093	1093	1149	1157	1193	1251	1236
391	390	386	375	369	358	360	351	346	347	342	340	347	337	349	353	367	380	388	403	411	416	412	400	401	407	421	427	429	432	428	424	428	430	414	395

Figure 41. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS8 (Surface)
NOAA16, using all observations



-7.8	-7.7	-7.3	-7.3	-7.2	-7.3	-7.2	-7.1	-7.1	-6.4	-4.9	-5.7	-5.0	-4.8	-4.6	-5.7	-9.2	-10.6	-12.9	-13.5	-12.2	-11.1	-10.7	-11.3	-10.5	-10.1	-10.3	-10.2	-9.5	-9.2	-8.5	-8.1	-7.7	-8.4	-9.3	-8.8
-9.4	-9.8	-9.0	-8.8	-8.9	-9.7	-10.0	-9.4	-7.8	-5.6	-3.4	-4.1	-6.6	-9.1	-9.5	-8.1	-15.3	-16.4	-18.3	-17.8	-15.3	-15.5	-14.6	-12.8	-11.1	-10.4	-10.3	-11.6	-9.5	-8.1	-7.4	-8.2	-7.4	-6.8	-7.8	-9.6
-10.8	-10.0	-9.2	-6.2	-6.3	-7.3	-9.8	-8.3	-7.3	-4.0	-3.4	-6.8	-19.1	-13.1	-17.6	-17.3	-17.5	-19.3	-20.8	-18.5	-14.3	-12.9	-12.9	-11.1	-11.8	-11.9	-11.0	-5.9	-5.8	-5.9	-5.6	-1.7	-2.2	-5.2	-5.4	-8.9
-15.7	-14.0	-14.6	-13.4	-13.4	-12.3	-9.5	-5.8	-6.1	-5.8	-5.8	-5.8	-19.2	-23.0	-18.3	-17.0	-17.2	-15.0	-13.4	-11.5	-12.8	-15.1	-15.0	-10.1	-10.1	-9.3	-8.5	-5.4	-5.0	-2.6	-4.1	-4.2	-12.2	-14.6	-16.5	-16.9
-15.6	-17.0	-16.9	-15.5	-18.6	-17.1	-10.2	-7.1	-6.5	-10.6	-9.6	-14.4	-18.2	-19.5	-19.0	-14.0	-11.6	-8.7	-7.6	-12.3	-13.5	-17.4	-14.6	-13.1	-12.1	-8.5	-2.2	1.7	1.9	-1.3	-4.3	-8.9	-13.6	-16.6	-18.0	-17.6
-14.3	-17.4	-22.0	-24.2	-19.5	-13.0	-10.4	-10.5	-13.1	-12.9	-15.7	-16.8	-15.8	-17.9	-14.6	-12.6	-8.3	-3.1	-5.9	-9.5	-12.4	-10.3	-8.1	-8.7	-11.3	-9.1	-6.9	-5.9	-5.2	-6.7	-12.5	-15.4	-17.8	-20.2	-19.6	-16.7
-6.8	-9.9	-17.1	-18.5	-13.7	-10.5	-11.6	-11.6	-9.1	-7.7	-7.7	-5.9	-9.6	-10.6	-9.3	-8.9	-6.4	-7.7	-6.4	-4.0	-4.7	-4.3	-5.5	-6.4	-6.6	-6.6	-8.9	-6.8	-5.5	-6.7	-12.9	-10.8	-10.2	-8.6	-6.6	-7.2
-4.9	-6.0	-12.1	-11.6	-11.1	-11.2	-12.8	-7.8	-3.9	-6.9	-6.3	-8.3	-14.7	-10.4	-9.6	-11.9	-11.1	-11.1	-10.3	-6.6	-4.1	-2.4	-3.6	-4.3	-4.5	-7.2	-8.6	-7.1	-6.0	-6.0	-10.3	-11.5	-14.3	-11.1	-8.0	-6.8
-14.5	-9.1	-9.7	-10.7	-10.9	-10.5	-10.3	-9.4	-8.5	-9.5	-14.3	-16.0	-17.4	-12.8	-16.2	-14.7	-12.3	-12.9	-15.5	-14.4	-11.5	-5.5	-2.3	-8.1	-13.4	-12.9	-21.9	-18.4	-13.7	-16.4	-22.0	-20.2	-29.7	-26.8	-22.7	-20.4
-19.8	-13.5	-10.3	-9.9	-6.0	-4.8	-5.2	-4.4	-6.0	-5.5	-21.8	-28.6	-26.5	-21.0	-11.7	-8.6	-7.2	-6.0	-14.1	-22.2	-26.6	-17.1	-9.1	-18.4	-19.6	-19.0	-20.7	-23.0	-23.0	-22.5	-22.9	-30.4	-38.4	-37.9	-32.4	-29.1
-24.5	-23.6	-19.7	-15.8	-14.3	-7.5	-6.0	-6.5	-8.7	-7.4	-13.5	-23.8	-35.4	-23.9	-10.3	-5.2	-6.7	-4.0	-5.4	-20.7	-26.1	-24.8	-22.7	-14.8	-10.5	-13.3	-9.4	-8.9	-10.3	-12.0	-21.0	-22.5	-22.2	-19.0	-27.7	-24.7
-20.1	-18.6	-15.4	-18.0	-15.6	-8.7	-7.1	-7.7	-8.7	-8.8	-7.3	-13.1	-20.0	-18.5	-15.9	-12.7	-9.7	-4.7	-4.2	-8.3	-15.0	-11.7	-20.1	-15.7	-8.3	-7.5	-7.5	-7.9	-7.9	-6.1	-6.2	-8.7	-11.6	-15.2	-17.5	-13.8
-16.9	-16.2	-13.1	-16.3	-19.3	-17.2	-9.7	-7.3	-8.3	-7.5	-5.3	-10.9	-12.3	-11.9	-12.6	-14.5	-14.1	-10.0	-6.7	-7.3	-11.3	-12.0	-10.6	-15.6	-15.0	-10.2	-8.5	-7.5	-8.1	-8.3	-7.7	-9.3	-11.4	-12.1	-12.4	-12.6
-11.0	-13.6	-12.5	-14.8	-15.2	-13.2	-11.5	-10.4	-10.2	-10.1	-10.9	-11.0	-12.1	-13.4	-11.7	-13.0	-12.6	-12.2	-10.9	-10.9	-11.0	-10.6	-10.4	-11.6	-12.7	-13.4	-12.9	-11.6	-12.0	-12.4	-13.1	-12.7	-13.2	-11.9	-11.7	-11.0
-12.4	-12.6	-12.2	-12.3	-12.4	-13.1	-12.4	-12.0	-12.4	-13.8	-15.8	-14.5	-12.3	-11.1	-10.0	-10.5	-10.9	-10.7	-10.7	-10.6	-11.3	-12.5	-11.3	-11.4	-12.1	-11.8	-11.7	-11.9	-12.3	-12.5	-12.8	-12.5	-11.2	-11.1	-11.7	-11.8
-11.4	-11.2	-10.1	-10.5	-10.8	-9.6	-8.9	-8.6	-8.9	-11.0	-10.5	-11.4	-10.9	-9.8	-10.6	-10.3	-10.2	-10.9	-10.8	-9.9	-11.2	-10.6	-7.9	-8.2	-9.3	-10.2	-8.8	-8.6	-9.3	-9.8	-8.6	-7.6	-7.9	-8.5	-10.1	-10.7
-10.1	-10.6	-10.6	-10.5	-8.8	-7.2	-5.0	-3.3	-1.3	-2.0	-4.9	-5.4	-9.2	-9.1	-9.0	-7.3	-5.4	-1.7	.1	1.2	2.3	3.7	2.7	2.2	2.0	2.6	4.0	2.9	2.4	1.8	2.1	2.5	1.5	.8	-4.5	-9.1
-5.6	-6.5	-7.5	-6.9	-5.4	-4.2	-3.2	-.9	1.3	2.0	.7	-1.4	-1.6	-1.0	-.6	.4	1.2	2.1	3.0	3.3	3.8	4.4	4.7	4.5	4.4	4.5	4.2	3.6	3.7	3.5	2.9	1.8	1.0	-.4	-4.1	-5.6

Figure 42. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS8 (Surface)
NOAA16, using all observations

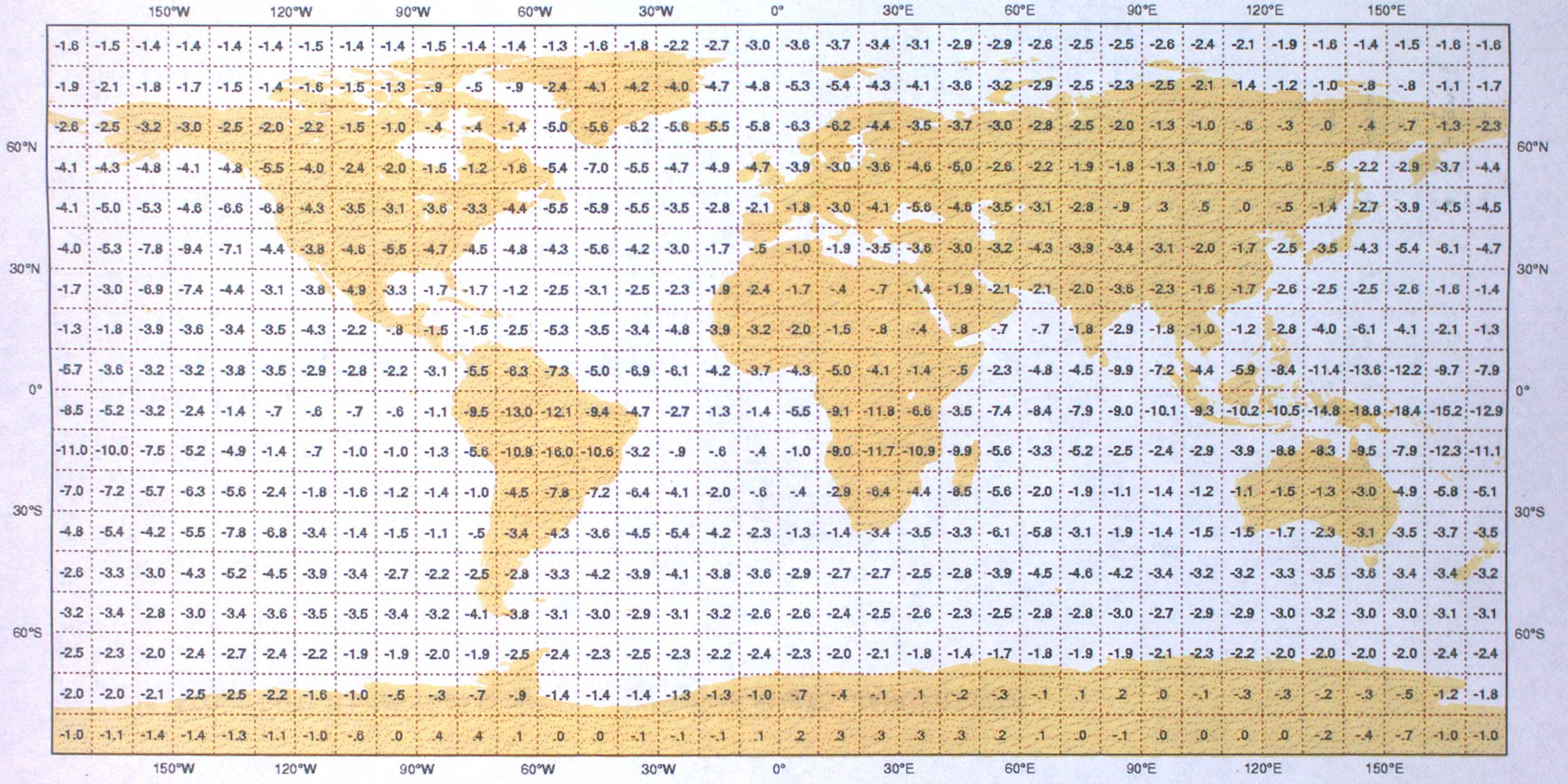


8.7	8.6	8.6	8.5	8.7	8.9	9.0	9.5	9.5	9.7	9.9	10.1	11.0	10.8	10.5	11.3	9.4	9.2	10.5	10.7	10.6	10.1	9.8	9.9	9.8	9.7	9.4	9.4	9.4	8.7	8.4	7.7	7.8	8.2	8.4	8.2
8.9	8.7	8.7	9.3	9.6	9.3	9.2	8.9	9.3	9.2	8.3	9.6	13.3	14.7	13.5	15.1	13.1	11.6	12.3	14.1	12.8	12.0	10.8	9.8	9.3	8.5	8.3	8.3	8.8	8.6	8.4	8.1	8.5	8.3	8.6	8.8
10.9	11.3	13.9	13.8	11.9	10.3	9.4	9.7	9.7	9.3	9.6	11.4	15.9	18.1	16.3	15.6	16.4	14.9	15.3	16.1	13.0	10.9	10.3	9.0	10.0	8.8	7.6	8.1	8.9	9.5	10.2	10.5	11.2	11.3	11.9	11.7
12.1	13.4	12.8	12.1	13.7	15.0	12.6	10.1	9.4	9.8	10.7	10.9	14.6	14.2	13.9	14.0	14.7	14.1	13.2	11.4	11.1	12.2	12.2	8.8	7.9	7.8	8.0	8.4	7.7	7.8	8.1	9.2	10.7	12.4	11.4	11.3
13.7	14.3	15.3	14.9	15.0	14.7	12.5	11.1	11.0	13.7	13.5	14.7	14.7	15.8	15.3	11.9	10.3	9.4	10.3	13.6	15.0	16.7	14.8	11.6	10.0	10.1	10.1	9.2	8.1	7.2	7.6	10.7	10.6	12.0	13.7	13.6
13.4	16.7	19.0	19.5	17.4	13.8	14.6	15.7	16.2	16.1	14.7	15.2	14.8	18.2	15.3	12.1	9.0	8.8	10.2	11.6	14.4	14.4	14.3	15.7	15.2	15.4	15.2	13.3	11.1	10.1	11.3	12.3	12.9	14.6	16.0	14.0
8.3	12.8	19.0	19.3	15.6	13.7	15.1	17.3	12.9	10.4	9.4	7.3	12.6	14.9	13.4	11.8	12.7	14.5	13.2	9.6	9.5	12.2	12.1	13.3	14.3	14.1	16.2	11.7	7.7	6.8	8.8	9.8	9.9	9.2	8.1	8.3
8.3	11.1	17.1	16.0	14.9	14.5	16.7	14.2	8.9	10.0	9.3	11.4	16.7	14.1	13.6	14.9	16.1	15.7	14.9	11.5	11.3	10.6	9.3	8.2	8.4	13.2	13.4	10.8	8.9	8.4	11.7	13.8	16.2	13.6	11.4	9.3
19.2	13.9	13.7	14.5	15.6	14.5	13.7	12.6	10.7	12.5	14.4	17.0	18.3	16.3	19.1	19.5	16.5	16.6	17.4	17.7	17.7	14.0	9.7	13.7	17.7	17.1	23.2	20.2	17.4	17.4	19.7	21.6	23.4	22.8	21.5	20.2
23.0	19.2	15.5	14.6	10.7	8.3	8.3	7.1	8.8	8.3	19.5	23.0	23.1	21.1	15.4	13.3	10.4	10.9	20.2	22.2	24.4	20.4	14.4	21.2	21.5	21.9	22.2	23.9	21.6	21.2	21.2	22.4	24.5	25.3	25.2	24.9
23.0	23.5	21.3	19.4	17.9	10.9	8.3	7.6	8.2	7.9	17.7	23.0	24.1	21.2	14.3	8.3	9.2	6.7	8.2	23.1	24.7	24.0	24.1	19.2	16.1	19.5	12.5	11.8	13.5	16.3	23.6	22.3	21.4	20.5	23.4	26.1
20.0	20.0	17.6	19.6	18.4	12.9	9.9	9.8	8.6	7.2	7.4	20.4	23.9	19.1	18.2	14.4	12.5	8.1	6.4	17.3	21.3	17.7	23.4	19.1	12.9	11.4	9.1	8.3	8.5	14.4	15.4	16.5	17.6	17.7	16.6	16.4
15.5	15.4	12.8	16.6	19.3	17.1	12.3	8.9	8.5	6.7	8.1	20.6	19.5	14.4	15.9	16.0	14.0	11.8	9.2	11.3	16.9	15.5	14.2	18.2	17.0	13.1	10.8	8.9	8.8	10.8	12.1	14.6	18.2	15.8	14.5	14.4
9.8	11.3	11.1	14.0	15.0	14.5	12.6	11.1	11.0	9.2	11.9	16.4	14.9	15.7	14.1	13.8	12.3	11.7	10.6	10.1	10.0	10.4	11.9	13.5	14.3	13.6	12.6	11.0	10.2	10.5	11.6	11.7	13.2	13.0	13.4	12.3
8.9	9.4	9.2	10.1	10.8	11.3	11.1	10.4	9.9	10.0	11.5	12.6	11.3	11.3	10.8	10.8	10.3	9.2	8.4	8.4	8.6	8.8	8.6	9.4	9.9	9.8	9.5	9.9	10.1	10.3	10.1	10.5	10.3	10.3	10.5	9.3
8.2	8.2	7.8	8.6	8.8	8.4	8.0	8.5	8.3	8.2	8.2	10.2	9.4	8.8	9.0	9.2	9.3	9.7	9.5	8.5	8.5	8.4	9.5	10.7	9.6	9.1	10.1	10.8	10.9	10.1	10.1	11.0	10.1	8.9	8.6	8.3
8.3	8.5	9.6	11.2	11.5	11.1	9.6	7.8	7.3	7.5	7.7	8.8	7.8	8.5	8.8	9.6	11.0	11.4	11.4	11.0	10.8	10.6	11.2	10.9	9.8	10.0	10.9	11.1	10.8	10.7	10.3	10.2	9.0	9.7	11.4	9.0
9.8	9.7	10.4	11.3	11.4	11.0	10.6	9.9	8.1	6.1	6.3	7.5	8.3	8.5	9.2	9.7	9.7	9.5	9.4	9.5	9.9	10.8	11.3	11.3	11.5	11.4	10.7	9.9	9.9	9.6	9.2	9.1	9.5	10.3	10.6	9.9

Figure 43. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005

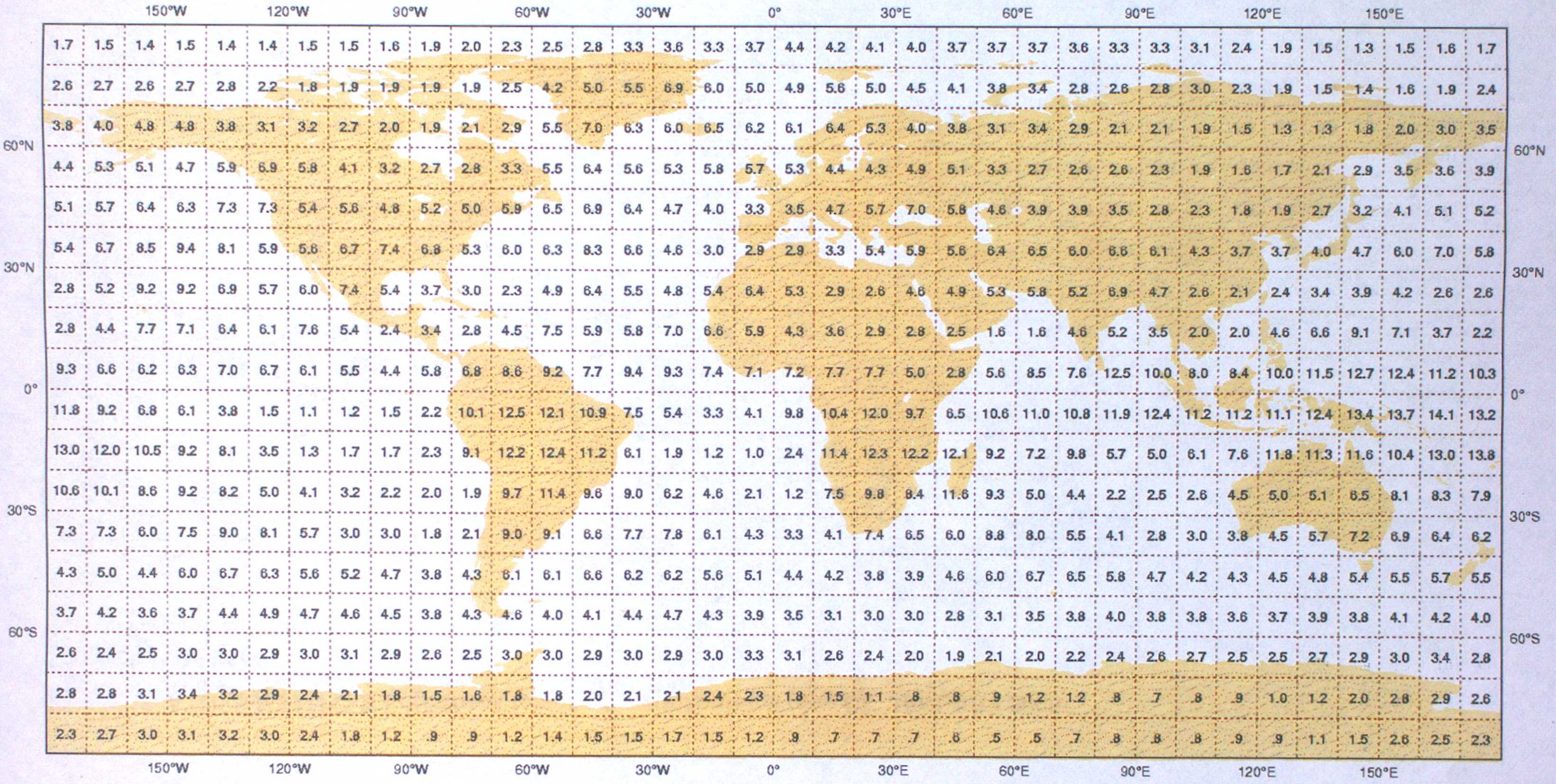
Channel: HIRS15 (700 hPa)

NOAA16, using all observations



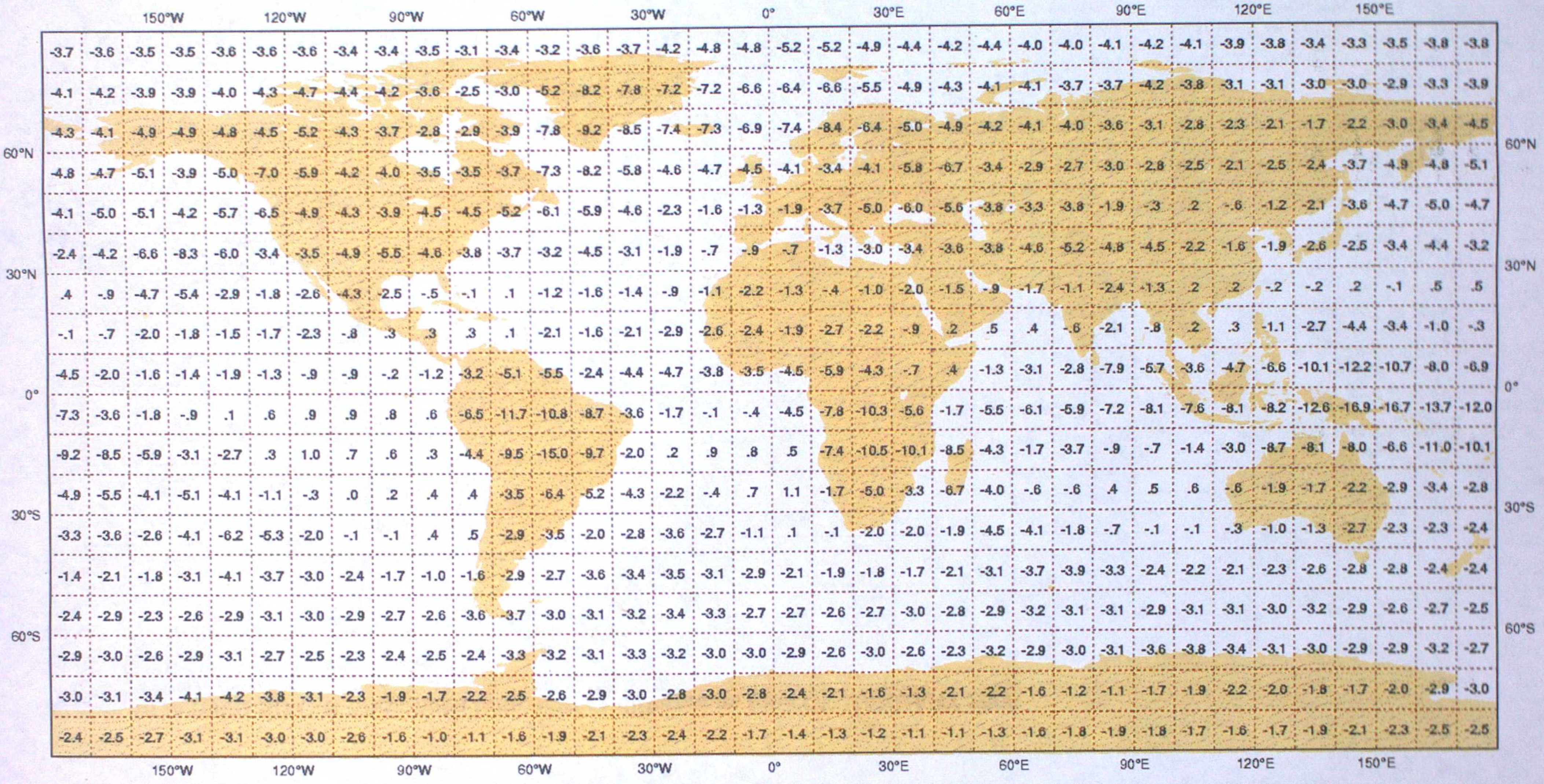
-1.6	-1.5	-1.4	-1.4	-1.4	-1.4	-1.5	-1.4	-1.4	-1.5	-1.4	-1.4	-1.3	-1.6	-1.8	-2.2	-2.7	-3.0	-3.6	-3.7	-3.4	-3.1	-2.9	-2.9	-2.6	-2.5	-2.5	-2.6	-2.4	-2.1	-1.9	-1.6	-1.4	-1.5	-1.6	-1.6
-1.9	-2.1	-1.8	-1.7	-1.5	-1.4	-1.6	-1.5	-1.3	-.9	-.5	-.9	-2.4	-4.1	-4.2	-4.0	-4.7	-4.8	-5.3	-5.4	-4.3	-4.1	-3.6	-3.2	-2.9	-2.5	-2.3	-2.5	-2.1	-1.4	-1.2	-1.0	-.8	-.8	-1.1	-1.7
-2.6	-2.5	-3.2	-3.0	-2.5	-2.0	-2.2	-1.5	-1.0	-.4	-.4	-1.4	-5.0	-5.6	-6.2	-5.6	-5.5	-5.8	-6.3	-6.2	-4.4	-3.5	-3.7	-3.0	-2.8	-2.5	-2.0	-1.3	-1.0	-.6	-.3	.0	-.4	-.7	-1.3	-2.3
-4.1	-4.3	-4.8	-4.1	-4.8	-5.5	-4.0	-2.4	-2.0	-1.5	-1.2	-1.6	-5.4	-7.0	-5.5	-4.7	-4.9	-4.7	-3.9	-3.0	-3.6	-4.6	-5.0	-2.6	-2.2	-1.9	-1.8	-1.3	-1.0	-.5	-.6	-.5	-2.2	-2.9	-3.7	-4.4
-4.1	-5.0	-5.3	-4.6	-6.6	-6.8	-4.3	-3.5	-3.1	-3.6	-3.3	-4.4	-5.5	-5.9	-5.5	-3.5	-2.8	-2.1	-1.8	-3.0	-4.1	-5.6	-4.6	-3.5	-3.1	-2.8	-.9	.3	.5	.0	-.5	-1.4	-2.7	-3.9	-4.5	-4.5
-4.0	-5.3	-7.8	-9.4	-7.1	-4.4	-3.8	-4.6	-5.5	-4.7	-4.5	-4.8	-4.3	-5.6	-4.2	-3.0	-1.7	-.5	-1.0	-1.9	-3.5	-3.6	-3.0	-3.2	-4.3	-3.9	-3.4	-3.1	-2.0	-1.7	-2.5	-3.5	-4.3	-5.4	-6.1	-4.7
-1.7	-3.0	-6.9	-7.4	-4.4	-3.1	-3.8	-4.9	-3.3	-1.7	-1.7	-1.2	-2.5	-3.1	-2.5	-2.3	-1.9	-2.4	-1.7	-.4	-.7	-1.4	-1.9	-2.1	-2.1	-2.0	-3.6	-2.3	-1.6	-1.7	-2.6	-2.5	-2.5	-2.6	-1.6	-1.4
-1.3	-1.8	-3.9	-3.6	-3.4	-3.5	-4.3	-2.2	-.8	-1.5	-1.5	-2.5	-5.3	-3.5	-3.4	-4.8	-3.9	-3.2	-2.0	-1.5	-.8	-.4	-.8	-.7	-.7	-1.8	-2.9	-1.8	-1.0	-1.2	-2.8	-4.0	-6.1	-4.1	-2.1	-1.3
-5.7	-3.6	-3.2	-3.2	-3.8	-3.5	-2.9	-2.8	-2.2	-3.1	-5.5	-6.3	-7.3	-5.0	-6.9	-6.1	-4.2	-3.7	-4.3	-5.0	-4.1	-1.4	-.5	-2.3	-4.8	-4.5	-9.9	-7.2	-4.4	-5.9	-8.4	-11.4	-13.6	-12.2	-9.7	-7.9
-8.5	-5.2	-3.2	-2.4	-1.4	-.7	-.6	-.7	-.6	-1.1	-9.5	-13.0	-12.1	-9.4	-4.7	-2.7	-1.3	-1.4	-5.5	-9.1	-11.8	-6.6	-3.5	-7.4	-8.4	-7.9	-9.0	-10.1	-9.3	-10.2	-10.5	-14.8	-18.8	-18.4	-15.2	-12.9
-11.0	-10.0	-7.5	-5.2	-4.9	-1.4	-.7	-1.0	-1.0	-1.3	-5.6	-10.9	-16.0	-10.6	-3.2	-.9	-.6	-.4	-1.0	-9.0	-11.7	-10.9	-9.9	-5.6	-3.3	-5.2	-2.5	-2.4	-2.9	-3.9	-8.8	-8.3	-9.5	-7.9	-12.3	-11.1
-7.0	-7.2	-5.7	-6.3	-5.6	-2.4	-1.8	-1.6	-1.2	-1.4	-1.0	-4.5	-7.8	-7.2	-6.4	-4.1	-2.0	-.6	-.4	-2.9	-6.4	-4.4	-8.5	-5.6	-2.0	-1.9	-1.1	-1.4	-1.2	-1.1	-1.5	-1.3	-3.0	-4.9	-5.8	-5.1
-4.8	-5.4	-4.2	-5.5	-7.8	-6.8	-3.4	-1.4	-1.5	-1.1	-.5	-3.4	-4.3	-3.6	-4.5	-5.4	-4.2	-2.3	-1.3	-1.4	-3.4	-3.5	-3.3	-6.1	-5.8	-3.1	-1.9	-1.4	-1.5	-1.5	-1.7	-2.3	-3.1	-3.5	-3.7	-3.5
-2.6	-3.3	-3.0	-4.3	-5.2	-4.5	-3.9	-3.4	-2.7	-2.2	-2.5	-2.8	-3.3	-4.2	-3.9	-4.1	-3.8	-3.6	-2.9	-2.7	-2.7	-2.5	-2.8	-3.9	-4.5	-4.6	-4.2	-3.4	-3.2	-3.2	-3.3	-3.5	-3.6	-3.4	-3.4	-3.2
-3.2	-3.4	-2.8	-3.0	-3.4	-3.6	-3.5	-3.5	-3.4	-3.2	-4.1	-3.8	-3.1	-3.0	-2.9	-3.1	-3.2	-2.6	-2.6	-2.4	-2.5	-2.6	-2.3	-2.5	-2.8	-2.8	-3.0	-2.7	-2.9	-2.9	-3.0	-3.2	-3.0	-3.0	-3.1	-3.1
-2.5	-2.3	-2.0	-2.4	-2.7	-2.4	-2.2	-1.9	-1.9	-2.0	-1.9	-2.5	-2.4	-2.3	-2.5	-2.3	-2.2	-2.4	-2.3	-2.0	-2.1	-1.8	-1.4	-1.7	-1.8	-1.9	-1.9	-2.1	-2.3	-2.2	-2.0	-2.0	-2.0	-2.0	-2.4	-2.4
-2.0	-2.0	-2.1	-2.5	-2.5	-2.2	-1.6	-1.0	-.5	-.3	-.7	-.9	-1.4	-1.4	-1.4	-1.3	-1.3	-1.0	-.7	-.4	-.1	.1	-.2	-.3	-.1	.1	.2	.0	-.1	-.3	-.3	-.2	-.3	-.5	-1.2	-1.8
-1.0	-1.1	-1.4	-1.4	-1.3	-1.1	-1.0	-.6	.0	.4	.4	.1	.0	.0	-.1	-.1	-.1	.1	.2	.3	.3	.3	.3	.2	.1	.0	-.1	.0	.0	.0	.0	-.2	-.4	-.7	-1.0	-1.0

Figure 44. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS15 (700 hPa)
NOAA16, using all observations



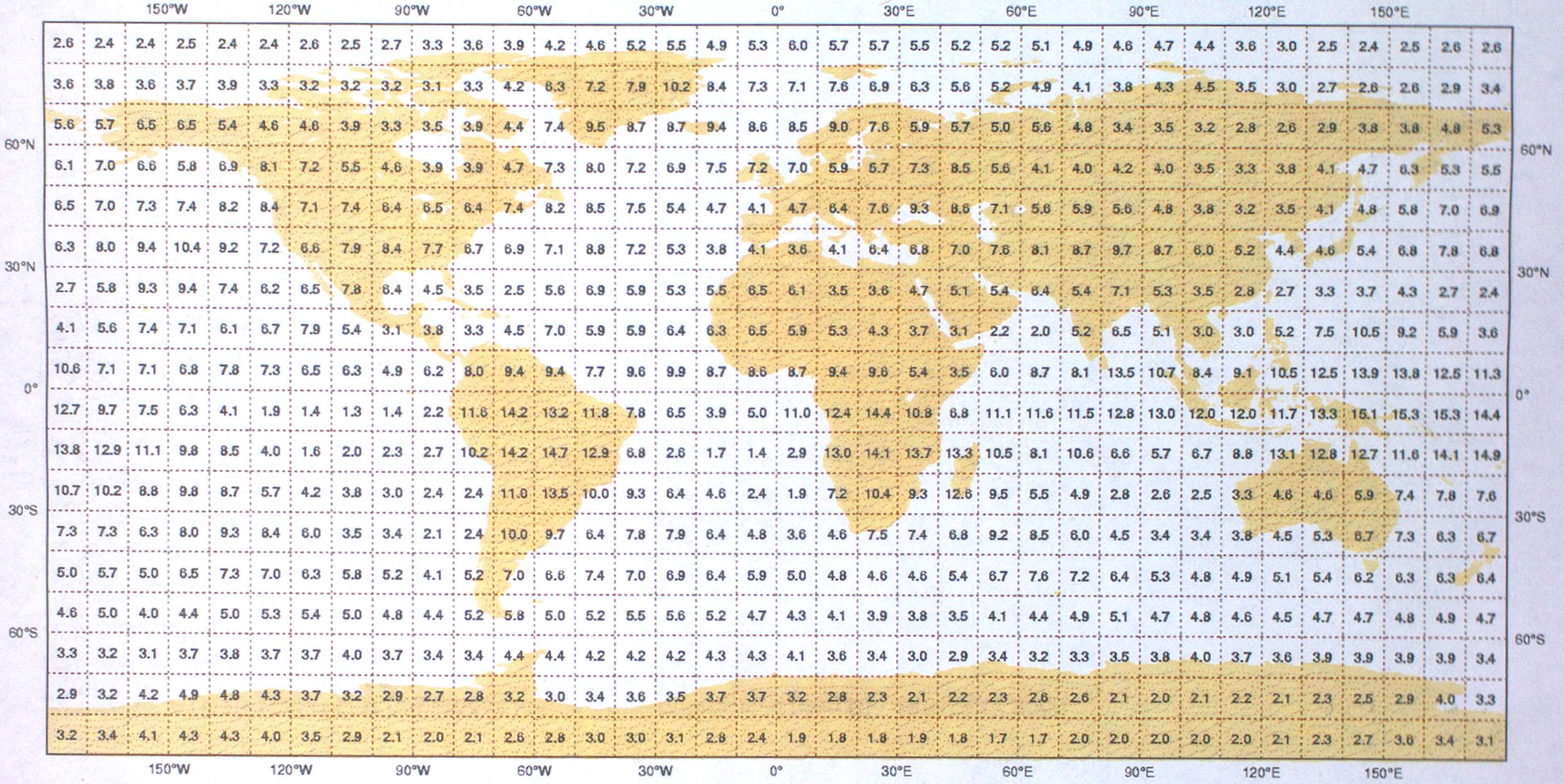
1.7	1.5	1.4	1.5	1.4	1.4	1.5	1.5	1.6	1.9	2.0	2.3	2.5	2.8	3.3	3.6	3.3	3.7	4.4	4.2	4.1	4.0	3.7	3.7	3.7	3.6	3.3	3.3	3.1	2.4	1.9	1.5	1.3	1.5	1.6	1.7
2.6	2.7	2.6	2.7	2.8	2.2	1.8	1.9	1.9	1.9	1.9	2.5	4.2	5.0	5.5	6.9	6.0	5.0	4.9	5.6	5.0	4.5	4.1	3.8	3.4	2.8	2.6	2.8	3.0	2.3	1.9	1.5	1.4	1.6	1.9	2.4
3.8	4.0	4.8	4.8	3.8	3.1	3.2	2.7	2.0	1.9	2.1	2.9	5.5	7.0	6.3	6.0	6.5	6.2	6.1	6.4	5.3	4.0	3.8	3.1	3.4	2.9	2.1	2.1	1.9	1.5	1.3	1.3	1.8	2.0	3.0	3.5
4.4	5.3	5.1	4.7	5.9	6.9	5.8	4.1	3.2	2.7	2.8	3.3	5.5	6.4	5.6	5.3	5.8	5.7	5.3	4.4	4.3	4.9	5.1	3.3	2.7	2.6	2.6	2.3	1.9	1.6	1.7	2.1	2.9	3.5	3.6	3.9
5.1	5.7	6.4	6.3	7.3	7.3	5.4	5.6	4.8	5.2	5.0	5.9	6.5	6.9	6.4	4.7	4.0	3.3	3.5	4.7	5.7	7.0	5.8	4.6	3.9	3.9	3.5	2.8	2.3	1.8	1.9	2.7	3.2	4.1	5.1	5.2
5.4	6.7	8.5	9.4	8.1	5.9	5.6	6.7	7.4	6.8	5.3	6.0	6.3	8.3	6.6	4.6	3.0	2.9	2.9	3.3	5.4	5.9	5.6	6.4	6.5	6.0	6.6	6.1	4.3	3.7	3.7	4.0	4.7	6.0	7.0	5.8
2.8	5.2	9.2	9.2	6.9	5.7	6.0	7.4	5.4	3.7	3.0	2.3	4.9	6.4	5.5	4.8	5.4	6.4	5.3	2.9	2.6	4.6	4.9	5.3	5.8	5.2	6.9	4.7	2.6	2.1	2.4	3.4	3.9	4.2	2.6	2.6
2.8	4.4	7.7	7.1	6.4	6.1	7.6	5.4	2.4	3.4	2.8	4.5	7.5	5.9	5.8	7.0	6.6	5.9	4.3	3.6	2.9	2.8	2.5	1.6	1.6	4.6	5.2	3.5	2.0	2.0	4.6	6.6	9.1	7.1	3.7	2.2
9.3	6.6	6.2	6.3	7.0	6.7	6.1	5.5	4.4	5.8	6.8	8.6	9.2	7.7	9.4	9.3	7.4	7.1	7.2	7.7	7.7	5.0	2.8	5.6	8.5	7.6	12.5	10.0	8.0	8.4	10.0	11.5	12.7	12.4	11.2	10.3
11.8	9.2	6.8	6.1	3.8	1.5	1.1	1.2	1.5	2.2	10.1	12.5	12.1	10.9	7.5	5.4	3.3	4.1	9.8	10.4	12.0	9.7	6.5	10.6	11.0	10.8	11.9	12.4	11.2	11.2	11.1	12.4	13.4	13.7	14.1	13.2
13.0	12.0	10.5	9.2	8.1	3.5	1.3	1.7	1.7	2.3	9.1	12.2	12.4	11.2	6.1	1.9	1.2	1.0	2.4	11.4	12.3	12.2	12.1	9.2	7.2	9.8	5.7	5.0	6.1	7.6	11.8	11.3	11.6	10.4	13.0	13.8
10.6	10.1	8.6	9.2	8.2	5.0	4.1	3.2	2.2	2.0	1.9	9.7	11.4	9.6	9.0	6.2	4.6	2.1	1.2	7.5	9.8	8.4	11.6	9.3	5.0	4.4	2.2	2.5	2.6	4.5	5.0	5.1	6.5	8.1	8.3	7.9
7.3	7.3	6.0	7.5	9.0	8.1	5.7	3.0	3.0	1.8	2.1	9.0	9.1	6.6	7.7	7.8	6.1	4.3	3.3	4.1	7.4	6.5	6.0	8.8	8.0	5.5	4.1	2.8	3.0	3.8	4.5	5.7	7.2	6.9	6.4	6.2
4.3	5.0	4.4	6.0	6.7	6.3	5.6	5.2	4.7	3.8	4.3	6.1	6.1	6.6	6.2	6.2	5.6	5.1	4.4	4.2	3.8	3.9	4.6	6.0	6.7	6.5	5.8	4.7	4.2	4.3	4.5	4.8	5.4	5.5	5.7	5.5
3.7	4.2	3.6	3.7	4.4	4.9	4.7	4.6	4.5	3.8	4.3	4.6	4.0	4.1	4.4	4.7	4.3	3.9	3.5	3.1	3.0	3.0	2.8	3.1	3.5	3.8	4.0	3.8	3.8	3.6	3.7	3.9	3.8	4.1	4.2	4.0
2.6	2.4	2.5	3.0	3.0	2.9	3.0	3.1	2.9	2.6	2.5	3.0	3.0	2.9	3.0	2.9	3.0	3.3	3.1	2.6	2.4	2.0	1.9	2.1	2.0	2.2	2.4	2.6	2.7	2.5	2.5	2.7	2.9	3.0	3.4	2.8
2.8	2.8	3.1	3.4	3.2	2.9	2.4	2.1	1.8	1.5	1.6	1.8	1.8	2.0	2.1	2.1	2.4	2.3	1.8	1.5	1.1	.8	.8	.9	1.2	1.2	.8	.7	.8	.9	1.0	1.2	2.0	2.8	2.9	2.6
2.3	2.7	3.0	3.1	3.2	3.0	2.4	1.8	1.2	.9	.9	1.2	1.4	1.5	1.5	1.7	1.5	1.2	.9	.7	.7	.7	.6	.5	.5	.7	.8	.8	.8	.9	.9	1.1	1.5	2.6	2.5	2.3

Figure 45. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



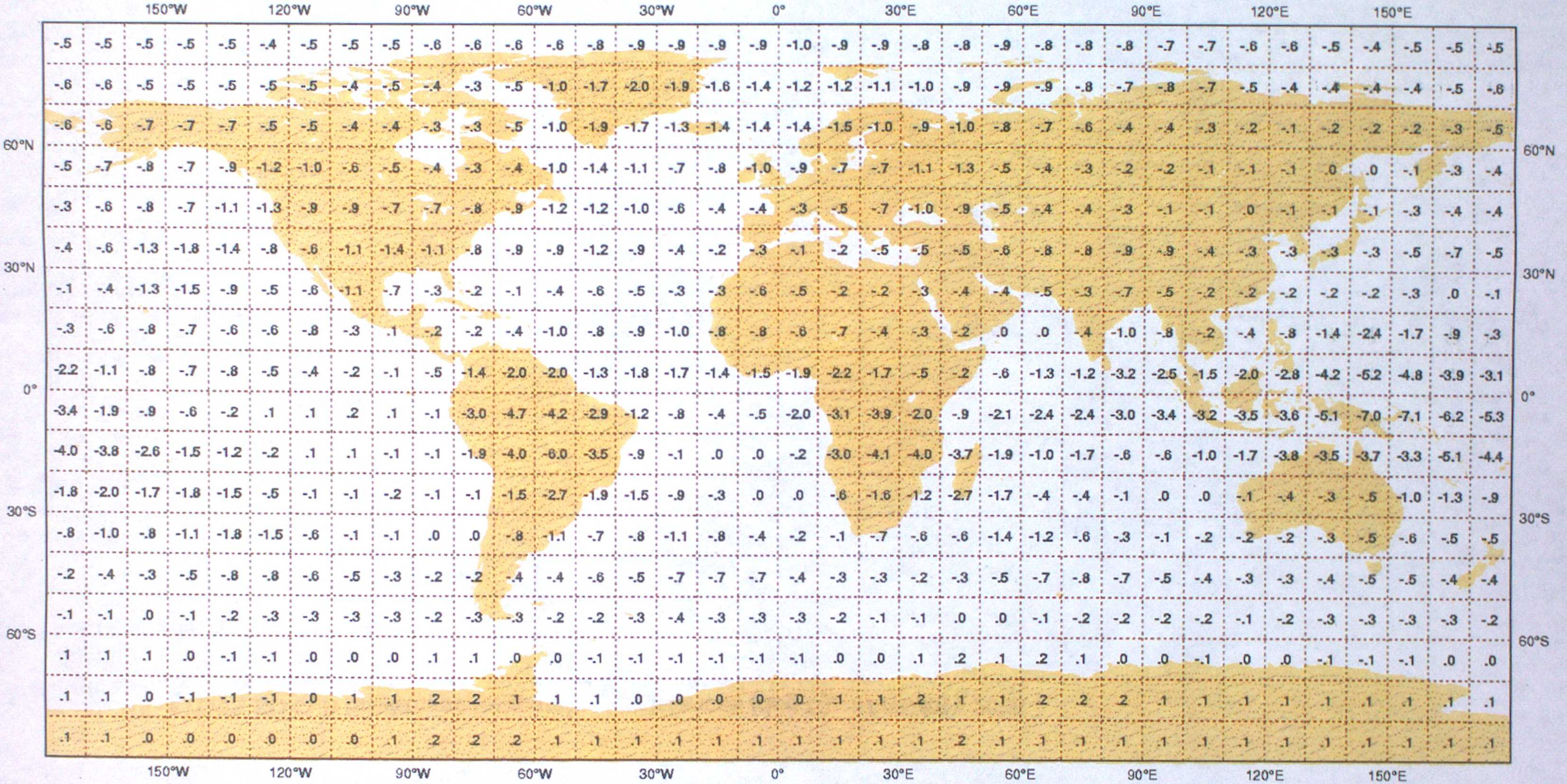
-3.7	-3.6	-3.5	-3.5	-3.6	-3.6	-3.6	-3.4	-3.4	-3.5	-3.1	-3.4	-3.2	-3.6	-3.7	-4.2	-4.8	-4.8	-5.2	-5.2	-4.9	-4.4	-4.2	-4.4	-4.0	-4.0	-4.1	-4.2	-4.1	-3.9	-3.8	-3.4	-3.3	-3.5	-3.8	-3.8
-4.1	-4.2	-3.9	-3.9	-4.0	-4.3	-4.7	-4.4	-4.2	-3.6	-2.5	-3.0	-5.2	-8.2	-7.8	-7.2	-7.2	-6.6	-6.4	-6.6	-5.5	-4.9	-4.3	-4.1	-4.1	-3.7	-3.7	-4.2	-3.8	-3.1	-3.1	-3.0	-3.0	-2.9	-3.3	-3.9
-4.3	-4.1	-4.9	-4.9	-4.8	-4.5	-5.2	-4.3	-3.7	-2.8	-2.9	-3.9	-7.8	-9.2	-8.5	-7.4	-7.3	-6.9	-7.4	-8.4	-6.4	-5.0	-4.9	-4.2	-4.1	-4.0	-3.6	-3.1	-2.8	-2.3	-2.1	-1.7	-2.2	-3.0	-3.4	-4.5
-4.8	-4.7	-5.1	-3.9	-5.0	-7.0	-5.9	-4.2	-4.0	-3.5	-3.5	-3.7	-7.3	-8.2	-5.8	-4.6	-4.7	-4.5	-4.1	-3.4	-4.1	-5.8	-6.7	-3.4	-2.9	-2.7	-3.0	-2.8	-2.5	-2.1	-2.5	-2.4	-3.7	-4.9	-4.8	-5.1
-4.1	-5.0	-5.1	-4.2	-5.7	-6.5	-4.9	-4.3	-3.9	-4.5	-4.5	-5.2	-6.1	-5.9	-4.6	-2.3	-1.6	-1.3	-1.9	-3.7	-5.0	-6.0	-5.6	-3.8	-3.3	-3.8	-1.9	-.3	.2	-.6	-1.2	-2.1	-3.6	-4.7	-5.0	-4.7
-2.4	-4.2	-6.6	-8.3	-6.0	-3.4	-3.5	-4.9	-5.5	-4.6	-3.8	-3.7	-3.2	-4.5	-3.1	-1.9	-.7	-.9	-.7	-1.3	-3.0	-3.4	-3.6	-3.8	-4.6	-5.2	-4.8	-4.5	-2.2	-1.6	-1.9	-2.6	-2.5	-3.4	-4.4	-3.2
.4	-.9	-4.7	-5.4	-2.9	-1.8	-2.6	-4.3	-2.5	-.5	-.1	.1	-1.2	-1.6	-1.4	-.9	-1.1	-2.2	-1.3	-.4	-1.0	-2.0	-1.5	-.9	-1.7	-1.1	-2.4	-1.3	.2	.2	-.2	-.2	.2	-.1	.5	.5
-.1	-.7	-2.0	-1.8	-1.5	-1.7	-2.3	-.8	.3	.3	.3	.1	-2.1	-1.6	-2.1	-2.9	-2.6	-2.4	-1.9	-2.7	-2.2	-.9	.2	.5	.4	-.6	-2.1	-.8	.2	.3	-1.1	-2.7	-4.4	-3.4	-1.0	-.3
-4.5	-2.0	-1.6	-1.4	-1.9	-1.3	-.9	-.9	-.2	-1.2	-3.2	-5.1	-5.5	-2.4	-4.4	-4.7	-3.8	-3.5	-4.5	-5.9	-4.3	-.7	.4	-1.3	-3.1	-2.8	-7.9	-5.7	-3.6	-4.7	-6.6	-10.1	-12.2	-10.7	-8.0	-6.9
-7.3	-3.6	-1.8	-.9	.1	.6	.9	.9	.8	.6	-6.5	-11.7	-10.8	-8.7	-3.6	-1.7	-.1	-.4	-4.5	-7.8	-10.3	-5.6	-1.7	-5.5	-6.1	-5.9	-7.2	-8.1	-7.6	-8.1	-8.2	-12.6	-16.9	-16.7	-13.7	-12.0
-9.2	-8.5	-5.9	-3.1	-2.7	.3	1.0	.7	.6	.3	-4.4	-9.5	-15.0	-9.7	-2.0	.2	.9	.8	.5	-7.4	-10.5	-10.1	-8.5	-4.3	-1.7	-3.7	-.9	-.7	-1.4	-3.0	-8.7	-8.1	-8.0	-6.6	-11.0	-10.1
-4.9	-5.5	-4.1	-5.1	-4.1	-1.1	-.3	.0	.2	.4	.4	-3.5	-6.4	-5.2	-4.3	-2.2	-.4	.7	1.1	-1.7	-5.0	-3.3	-6.7	-4.0	-.6	-.6	.4	.5	.6	-.6	-1.9	-1.7	-2.2	-2.9	-3.4	-2.8
-3.3	-3.6	-2.6	-4.1	-6.2	-5.3	-2.0	-.1	-.1	.4	.5	-2.9	-3.5	-2.0	-2.8	-3.6	-2.7	-1.1	.1	-.1	-2.0	-2.0	-1.9	-4.5	-4.1	-1.8	-.7	-.1	-.1	-.3	-1.0	-1.3	-2.7	-2.3	-2.3	-2.4
-1.4	-2.1	-1.8	-3.1	-4.1	-3.7	-3.0	-2.4	-1.7	-1.0	-1.6	-2.9	-2.7	-3.6	-3.4	-3.5	-3.1	-2.9	-2.1	-1.9	-1.8	-1.7	-2.1	-3.1	-3.7	-3.9	-3.3	-2.4	-2.2	-2.1	-2.3	-2.6	-2.8	-2.8	-2.4	-2.4
-2.4	-2.9	-2.3	-2.6	-2.9	-3.1	-3.0	-2.9	-2.7	-2.6	-3.6	-3.7	-3.0	-3.1	-3.2	-3.4	-3.3	-2.7	-2.7	-2.6	-2.7	-3.0	-2.8	-2.9	-3.2	-3.1	-3.1	-2.9	-3.1	-3.1	-3.0	-3.2	-2.9	-2.6	-2.7	-2.5
-2.9	-3.0	-2.6	-2.9	-3.1	-2.7	-2.5	-2.3	-2.4	-2.5	-2.4	-3.3	-3.2	-3.1	-3.3	-3.2	-3.0	-3.0	-2.9	-2.6	-3.0	-2.6	-2.3	-3.2	-2.9	-3.0	-3.1	-3.6	-3.8	-3.4	-3.1	-3.0	-2.9	-2.9	-3.2	-2.7
-3.0	-3.1	-3.4	-4.1	-4.2	-3.8	-3.1	-2.3	-1.9	-1.7	-2.2	-2.5	-2.6	-2.9	-3.0	-2.8	-3.0	-2.8	-2.4	-2.1	-1.6	-1.3	-2.1	-2.2	-1.6	-1.2	-1.1	-1.7	-1.9	-2.2	-2.0	-1.8	-1.7	-2.0	-2.9	-3.0
-2.4	-2.5	-2.7	-3.1	-3.1	-3.0	-3.0	-2.6	-1.6	-1.0	-1.1	-1.6	-1.9	-2.1	-2.3	-2.4	-2.2	-1.7	-1.4	-1.3	-1.2	-1.1	-1.1	-1.3	-1.6	-1.8	-1.9	-1.8	-1.7	-1.6	-1.7	-1.9	-2.1	-2.3	-2.5	-2.5

Figure 46. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS11 (500 - 700 hPa)
NOAA16, using all observations



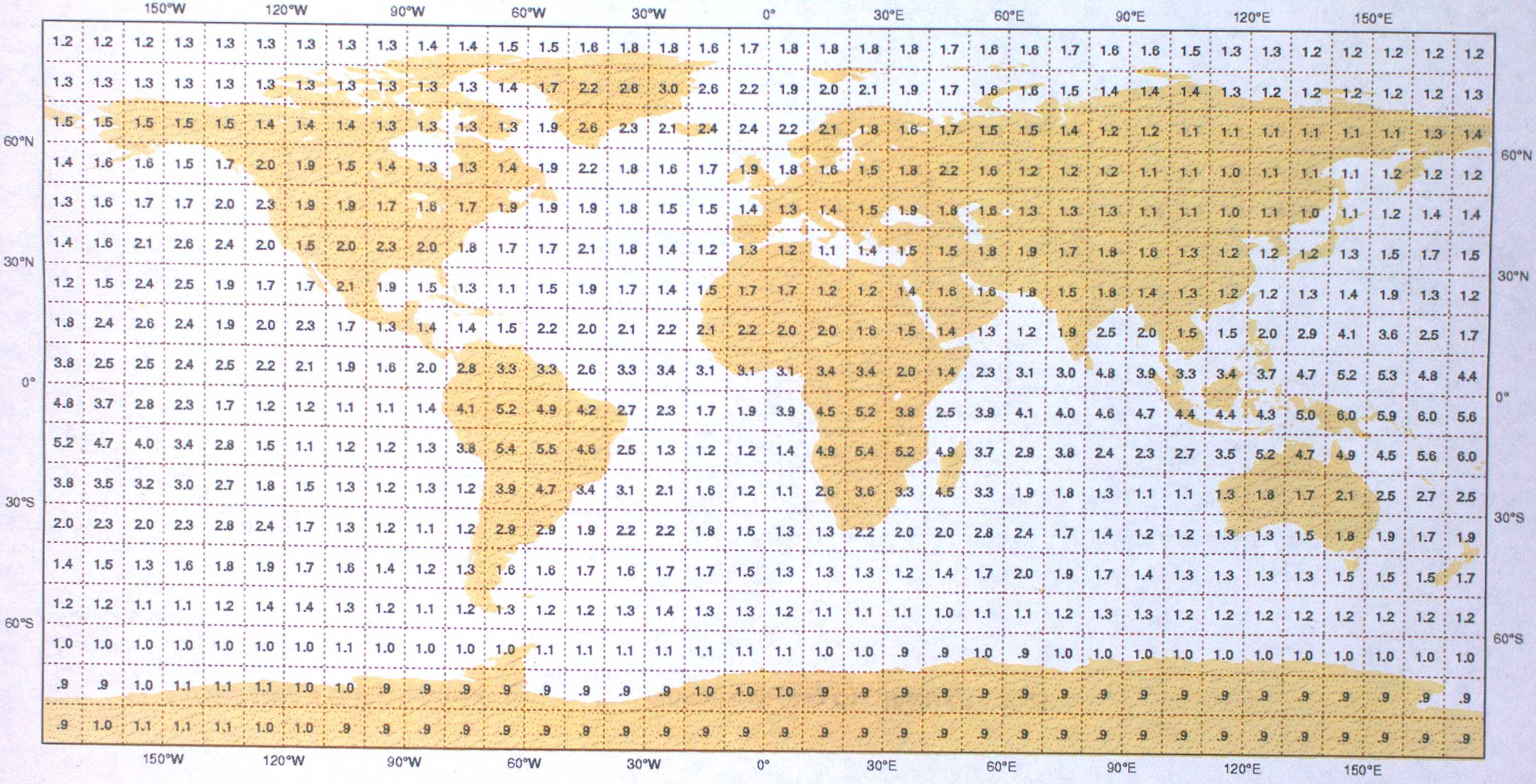
2.6	2.4	2.4	2.5	2.4	2.4	2.6	2.5	2.7	3.3	3.6	3.9	4.2	4.6	5.2	5.5	4.9	5.3	6.0	5.7	5.7	5.5	5.2	5.2	5.1	4.9	4.6	4.7	4.4	3.6	3.0	2.5	2.4	2.5	2.6	2.6
3.6	3.8	3.6	3.7	3.9	3.3	3.2	3.2	3.2	3.1	3.3	4.2	6.3	7.2	7.9	10.2	8.4	7.3	7.1	7.6	6.9	6.3	5.6	5.2	4.9	4.1	3.8	4.3	4.5	3.5	3.0	2.7	2.6	2.6	2.9	3.4
5.6	5.7	6.5	6.5	5.4	4.6	4.6	3.9	3.3	3.5	3.9	4.4	7.4	9.5	8.7	8.7	9.4	8.6	8.5	9.0	7.6	5.9	5.7	5.0	5.6	4.8	3.4	3.5	3.2	2.8	2.6	2.9	3.8	3.8	4.8	5.3
6.1	7.0	6.6	5.8	6.9	8.1	7.2	5.5	4.6	3.9	3.9	4.7	7.3	8.0	7.2	6.9	7.5	7.2	7.0	5.9	5.7	7.3	8.5	5.6	4.1	4.0	4.2	4.0	3.5	3.3	3.8	4.1	4.7	6.3	5.3	5.5
6.5	7.0	7.3	7.4	8.2	8.4	7.1	7.4	6.4	6.5	6.4	7.4	8.2	8.5	7.5	5.4	4.7	4.1	4.7	6.4	7.6	9.3	8.6	7.1	5.6	5.9	5.6	4.8	3.8	3.2	3.5	4.1	4.8	5.8	7.0	6.9
6.3	8.0	9.4	10.4	9.2	7.2	6.6	7.9	8.4	7.7	6.7	6.9	7.1	8.8	7.2	5.3	3.8	4.1	3.6	4.1	6.4	6.8	7.0	7.6	8.1	8.7	9.7	8.7	6.0	5.2	4.4	4.6	5.4	6.8	7.8	6.8
2.7	5.8	9.3	9.4	7.4	6.2	6.5	7.8	6.4	4.5	3.5	2.5	5.6	6.9	5.9	5.3	5.5	6.5	6.1	3.5	3.6	4.7	5.1	5.4	6.4	5.4	7.1	5.3	3.5	2.8	2.7	3.3	3.7	4.3	2.7	2.4
4.1	5.6	7.4	7.1	6.1	6.7	7.9	5.4	3.1	3.8	3.3	4.5	7.0	5.9	5.9	6.4	6.3	6.5	5.9	5.3	4.3	3.7	3.1	2.2	2.0	5.2	6.5	5.1	3.0	3.0	5.2	7.5	10.5	9.2	5.9	3.6
10.6	7.1	7.1	6.8	7.8	7.3	6.5	6.3	4.9	6.2	8.0	9.4	9.4	7.7	9.6	9.9	8.7	8.6	8.7	9.4	9.6	5.4	3.5	6.0	8.7	8.1	13.5	10.7	8.4	9.1	10.5	12.5	13.9	13.8	12.5	11.3
12.7	9.7	7.5	6.3	4.1	1.9	1.4	1.3	1.4	2.2	11.6	14.2	13.2	11.8	7.8	6.5	3.9	5.0	11.0	12.4	14.4	10.8	6.8	11.1	11.6	11.5	12.8	13.0	12.0	12.0	11.7	13.3	15.1	15.3	15.3	14.4
13.8	12.9	11.1	9.8	8.5	4.0	1.6	2.0	2.3	2.7	10.2	14.2	14.7	12.9	6.8	2.6	1.7	1.4	2.9	13.0	14.1	13.7	13.3	10.5	8.1	10.6	6.6	5.7	6.7	8.8	13.1	12.8	12.7	11.6	14.1	14.9
10.7	10.2	8.8	9.8	8.7	5.7	4.2	3.8	3.0	2.4	2.4	11.0	13.5	10.0	9.3	6.4	4.6	2.4	1.9	7.2	10.4	9.3	12.6	9.5	5.5	4.9	2.8	2.6	2.5	3.3	4.6	4.6	5.9	7.4	7.8	7.6
7.3	7.3	6.3	8.0	9.3	8.4	6.0	3.5	3.4	2.1	2.4	10.0	9.7	6.4	7.8	7.9	6.4	4.8	3.6	4.6	7.5	7.4	6.8	9.2	8.5	6.0	4.5	3.4	3.4	3.8	4.5	5.3	6.7	7.3	6.3	6.7
5.0	5.7	5.0	6.5	7.3	7.0	6.3	5.8	5.2	4.1	5.2	7.0	6.6	7.4	7.0	6.9	6.4	5.9	5.0	4.8	4.6	4.6	5.4	6.7	7.6	7.2	6.4	5.3	4.8	4.9	5.1	5.4	6.2	6.3	6.3	6.4
4.6	5.0	4.0	4.4	5.0	5.3	5.4	5.0	4.8	4.4	5.2	5.8	5.0	5.2	5.5	5.6	5.2	4.7	4.3	4.1	3.9	3.8	3.5	4.1	4.4	4.9	5.1	4.7	4.8	4.6	4.5	4.7	4.7	4.8	4.9	4.7
3.3	3.2	3.1	3.7	3.8	3.7	3.7	4.0	3.7	3.4	3.4	4.4	4.4	4.2	4.2	4.2	4.3	4.3	4.1	3.6	3.4	3.0	2.9	3.4	3.2	3.3	3.5	3.8	4.0	3.7	3.6	3.9	3.9	3.9	3.9	3.4
2.9	3.2	4.2	4.9	4.8	4.3	3.7	3.2	2.9	2.7	2.8	3.2	3.0	3.4	3.6	3.5	3.7	3.7	3.2	2.8	2.3	2.1	2.2	2.3	2.6	2.6	2.1	2.0	2.1	2.2	2.1	2.3	2.5	2.9	4.0	3.3
3.2	3.4	4.1	4.3	4.3	4.0	3.5	2.9	2.1	2.0	2.1	2.6	2.8	3.0	3.0	3.1	2.8	2.4	1.9	1.8	1.8	1.9	1.8	1.7	1.7	2.0	2.0	2.0	2.0	2.0	2.1	2.3	2.7	3.6	3.4	3.1

Figure 47. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



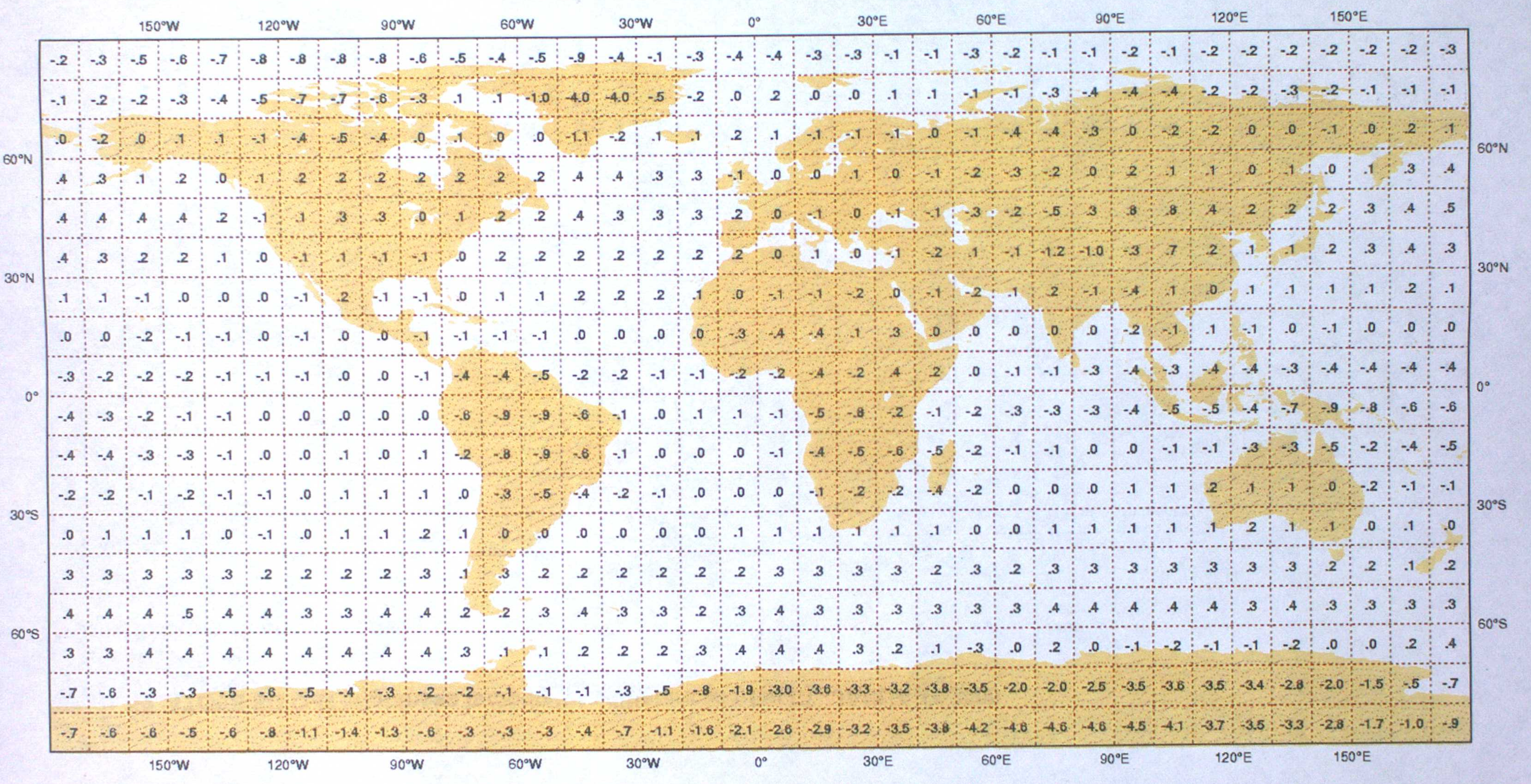
-.5	-.5	-.5	-.5	-.5	-.4	-.5	-.5	-.5	-.6	-.6	-.6	-.6	-.8	-.9	-.9	-.9	-.9	-1.0	-.9	-.9	-.8	-.8	-.9	-.8	-.8	-.8	-.7	-.7	-.6	-.6	-.5	-.4	-.5	-.5	-.5
-.6	-.6	-.5	-.5	-.5	-.5	-.5	-.4	-.5	-.4	-.3	-.5	-1.0	-1.7	-2.0	-1.9	-1.6	-1.4	-1.2	-1.2	-1.1	-1.0	-.9	-.9	-.9	-.8	-.7	-.8	-.7	-.5	-.4	-.4	-.4	-.4	-.5	-.6
-.6	-.6	-.7	-.7	-.7	-.5	-.5	-.4	-.4	-.3	-.3	-.5	-1.0	-1.9	-1.7	-1.3	-1.4	-1.4	-1.4	-1.5	-1.0	-.9	-1.0	-.8	-.7	-.6	-.4	-.4	-.3	-.2	-.1	-.2	-.2	-.2	-.3	-.5
-.5	-.7	-.8	-.7	-.9	-1.2	-1.0	-.6	-.5	-.4	-.3	-.4	-1.0	-1.4	-1.1	-.7	-.8	-1.0	-.9	-.7	-.7	-1.1	-1.3	-.5	-.4	-.3	-.2	-.2	-.1	-.1	-.1	.0	.0	-.1	-.3	-.4
-.3	-.6	-.8	-.7	-1.1	-1.3	-.9	-.9	-.7	-.7	-.8	-.9	-1.2	-1.2	-1.0	-.6	-.4	-.4	-.3	-.5	-.7	-1.0	-.9	-.5	-.4	-.4	-.3	-.1	-.1	.0	-.1	-.1	-.1	-.3	-.4	-.4
-.4	-.6	-1.3	-1.8	-1.4	-.8	-.6	-1.1	-1.4	-1.1	-.8	-.9	-.9	-1.2	-.9	-.4	-.2	-.3	-.1	-.2	-.5	-.5	-.5	-.6	-.8	-.8	-.9	-.9	-.4	-.3	-.3	-.3	-.3	-.5	-.7	-.5
-.1	-.4	-1.3	-1.5	-.9	-.5	-.6	-1.1	-.7	-.3	-.2	-.1	-.4	-.6	-.5	-.3	-.3	-.6	-.5	-.2	-.2	-.3	-.4	-.4	-.5	-.3	-.7	-.5	-.2	-.2	-.2	-.2	-.2	-.3	.0	-.1
-.3	-.6	-.8	-.7	-.6	-.6	-.8	-.3	.1	-.2	-.2	-.4	-1.0	-.8	-.9	-1.0	-.8	-.8	-.6	-.7	-.4	-.3	-.2	.0	.0	-.4	-1.0	-.8	-.2	-.4	-.8	-1.4	-2.4	-1.7	-.9	-.3
-2.2	-1.1	-.8	-.7	-.8	-.5	-.4	-.2	-.1	-.5	-1.4	-2.0	-2.0	-1.3	-1.8	-1.7	-1.4	-1.5	-1.9	-2.2	-1.7	-.5	-.2	-.6	-1.3	-1.2	-3.2	-2.5	-1.5	-2.0	-2.8	-4.2	-5.2	-4.8	-3.9	-3.1
-3.4	-1.9	-.9	-.6	-.2	.1	.1	.2	.1	-.1	-3.0	-4.7	-4.2	-2.9	-1.2	-.8	-.4	-.5	-2.0	-3.1	-3.9	-2.0	-.9	-2.1	-2.4	-2.4	-3.0	-3.4	-3.2	-3.5	-3.6	-5.1	-7.0	-7.1	-6.2	-5.3
-4.0	-3.8	-2.6	-1.5	-1.2	-.2	.1	.1	-.1	-.1	-1.9	-4.0	-6.0	-3.5	-.9	-.1	.0	.0	-.2	-3.0	-4.1	-4.0	-3.7	-1.9	-1.0	-1.7	-.6	-.6	-1.0	-1.7	-3.8	-3.5	-3.7	-3.3	-5.1	-4.4
-1.8	-2.0	-1.7	-1.8	-1.5	-.5	-.1	-.1	-.2	-.1	-.1	-1.5	-2.7	-1.9	-1.5	-.9	-.3	.0	.0	-.6	-1.6	-1.2	-2.7	-1.7	-.4	-.4	-.1	.0	.0	-.1	-.4	-.3	-.5	-1.0	-1.3	-.9
-.8	-1.0	-.8	-1.1	-1.8	-1.5	-.6	-.1	-.1	.0	.0	-.8	-1.1	-.7	-.8	-1.1	-.8	-.4	-.2	-.1	-.7	-.6	-.6	-1.4	-1.2	-.6	-.3	-.1	-.2	-.2	-.2	-.3	-.5	-.6	-.5	-.5
-.2	-.4	-.3	-.5	-.8	-.8	-.6	-.5	-.3	-.2	-.2	-.4	-.4	-.6	-.5	-.7	-.7	-.7	-.4	-.3	-.3	-.2	-.3	-.5	-.7	-.8	-.7	-.5	-.4	-.3	-.3	-.4	-.5	-.5	-.4	-.4
-.1	-.1	.0	-.1	-.2	-.3	-.3	-.3	-.3	-.2	-.3	-.3	-.2	-.2	-.3	-.4	-.3	-.3	-.3	-.2	-.1	-.1	.0	.0	-.1	-.2	-.2	-.2	-.2	-.1	-.2	-.3	-.3	-.3	-.3	-.2
.1	.1	.1	.0	-.1	-.1	.0	.0	.0	.1	.1	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	.0	.0	.1	.2	.1	.2	.1	.0	.0	-.1	.0	.0	-.1	-.1	-.1	.0	.0
.1	.1	.0	-.1	-.1	-.1	.0	.1	.1	.2	.2	.1	.1	.1	.0	.0	.0	.0	.0	.1	.1	.2	.1	.1	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1
.1	.1	.0	.0	.0	.0	.0	.0	.1	.2	.2	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1

Figure 48. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: HIRS4 (400 hPa)
NOAA16, using all observations



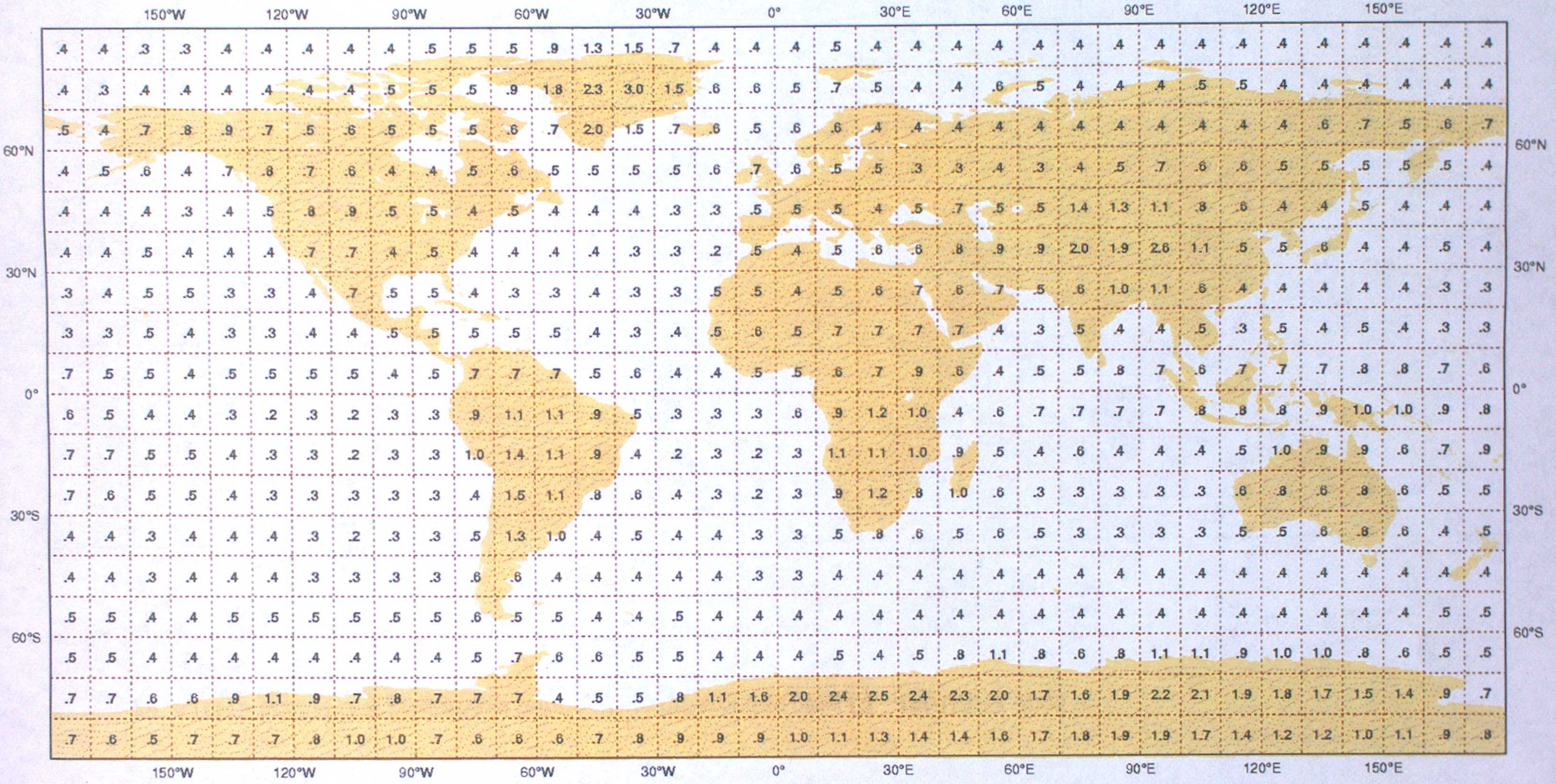
1.2	1.2	1.2	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.4	1.5	1.5	1.6	1.8	1.8	1.6	1.7	1.8	1.8	1.8	1.8	1.7	1.6	1.6	1.7	1.6	1.6	1.5	1.3	1.3	1.2	1.2	1.2	1.2	1.2
1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.3	1.4	1.7	2.2	2.6	3.0	2.6	2.2	1.9	2.0	2.1	1.9	1.7	1.6	1.6	1.5	1.4	1.4	1.4	1.3	1.2	1.2	1.2	1.2	1.2	1.3
1.5	1.5	1.5	1.5	1.5	1.4	1.4	1.4	1.3	1.3	1.3	1.3	1.9	2.6	2.3	2.1	2.4	2.4	2.2	2.1	1.8	1.6	1.7	1.5	1.5	1.4	1.2	1.2	1.1	1.1	1.1	1.1	1.1	1.1	1.3	1.4
1.4	1.6	1.6	1.5	1.7	2.0	1.9	1.5	1.4	1.3	1.3	1.4	1.9	2.2	1.8	1.6	1.7	1.9	1.8	1.6	1.5	1.8	2.2	1.6	1.2	1.2	1.2	1.1	1.1	1.0	1.1	1.1	1.1	1.2	1.2	1.2
1.3	1.6	1.7	1.7	2.0	2.3	1.9	1.9	1.7	1.6	1.7	1.9	1.9	1.9	1.8	1.5	1.5	1.4	1.3	1.4	1.5	1.9	1.8	1.6	1.3	1.3	1.3	1.1	1.1	1.0	1.1	1.0	1.1	1.2	1.4	1.4
1.4	1.6	2.1	2.6	2.4	2.0	1.5	2.0	2.3	2.0	1.8	1.7	1.7	2.1	1.8	1.4	1.2	1.3	1.2	1.1	1.4	1.5	1.5	1.8	1.9	1.7	1.8	1.6	1.3	1.2	1.2	1.2	1.3	1.5	1.7	1.5
1.2	1.5	2.4	2.5	1.9	1.7	1.7	2.1	1.9	1.5	1.3	1.1	1.5	1.9	1.7	1.4	1.5	1.7	1.7	1.2	1.2	1.4	1.6	1.6	1.8	1.5	1.8	1.4	1.3	1.2	1.2	1.3	1.4	1.9	1.3	1.2
1.8	2.4	2.6	2.4	1.9	2.0	2.3	1.7	1.3	1.4	1.4	1.5	2.2	2.0	2.1	2.2	2.1	2.2	2.0	2.0	1.6	1.5	1.4	1.3	1.2	1.9	2.5	2.0	1.5	1.5	2.0	2.9	4.1	3.6	2.5	1.7
3.8	2.5	2.5	2.4	2.5	2.2	2.1	1.9	1.6	2.0	2.8	3.3	3.3	2.6	3.3	3.4	3.1	3.1	3.1	3.4	3.4	2.0	1.4	2.3	3.1	3.0	4.8	3.9	3.3	3.4	3.7	4.7	5.2	5.3	4.8	4.4
4.8	3.7	2.8	2.3	1.7	1.2	1.2	1.1	1.1	1.4	4.1	5.2	4.9	4.2	2.7	2.3	1.7	1.9	3.9	4.5	5.2	3.8	2.5	3.9	4.1	4.0	4.6	4.7	4.4	4.4	4.3	5.0	6.0	5.9	6.0	5.6
5.2	4.7	4.0	3.4	2.8	1.5	1.1	1.2	1.2	1.3	3.8	5.4	5.5	4.6	2.5	1.3	1.2	1.2	1.4	4.9	5.4	5.2	4.9	3.7	2.9	3.8	2.4	2.3	2.7	3.5	5.2	4.7	4.9	4.5	5.6	6.0
3.8	3.5	3.2	3.0	2.7	1.8	1.5	1.3	1.2	1.3	1.2	3.9	4.7	3.4	3.1	2.1	1.6	1.2	1.1	2.6	3.6	3.3	4.5	3.3	1.9	1.8	1.3	1.1	1.1	1.3	1.8	1.7	2.1	2.5	2.7	2.5
2.0	2.3	2.0	2.3	2.8	2.4	1.7	1.3	1.2	1.1	1.2	2.9	2.9	1.9	2.2	2.2	1.8	1.5	1.3	1.3	2.2	2.0	2.0	2.8	2.4	1.7	1.4	1.2	1.2	1.3	1.3	1.5	1.8	1.9	1.7	1.9
1.4	1.5	1.3	1.6	1.8	1.9	1.7	1.6	1.4	1.2	1.3	1.6	1.6	1.7	1.6	1.7	1.7	1.5	1.3	1.3	1.3	1.2	1.4	1.7	2.0	1.9	1.7	1.4	1.3	1.3	1.3	1.3	1.5	1.5	1.5	1.7
1.2	1.2	1.1	1.1	1.2	1.4	1.4	1.3	1.2	1.1	1.2	1.3	1.2	1.2	1.3	1.4	1.3	1.3	1.2	1.1	1.1	1.1	1.0	1.1	1.1	1.2	1.3	1.3	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2
1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.1	1.0	1.0	1.0	1.0	1.1	1.1	1.1	1.1	1.1	1.1	1.1	1.0	1.0	.9	.9	1.0	.9	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
.9	.9	1.0	1.1	1.1	1.1	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.9	1.0	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9
.9	1.0	1.1	1.1	1.1	1.0	1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9

Figure 49. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



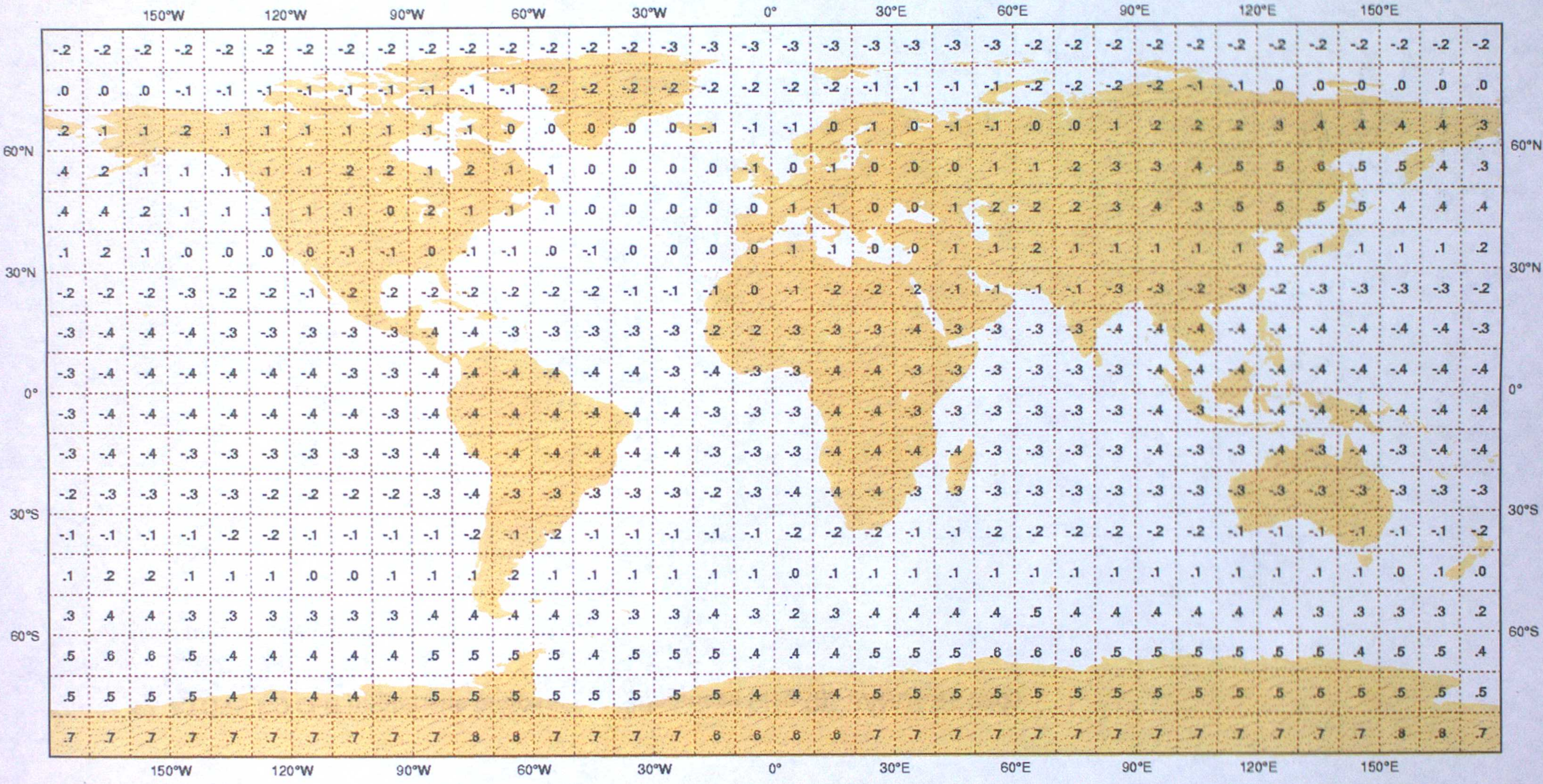
-.2	-.3	-.5	-.6	-.7	-.8	-.8	-.8	-.8	-.6	-.5	-.4	-.5	-.9	-.4	-.1	-.3	-.4	-.4	-.3	-.3	-.1	-.1	-.3	-.2	-.1	-.1	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.3
-.1	-.2	-.2	-.3	-.4	-.5	-.7	-.7	-.6	-.3	.1	.1	-1.0	-4.0	-4.0	-.5	-.2	.0	.2	.0	.0	.1	.1	-.1	-.1	-.3	-.4	-.4	-.4	-.2	-.2	-.3	-.2	-.1	-.1	-.1
.0	-.2	.0	.1	.1	-.1	-.4	-.5	-.4	.0	.1	.0	.0	-1.1	-.2	.1	.1	.2	.1	-.1	-.1	-.1	.0	-.1	-.4	-.4	-.3	.0	-.2	-.2	.0	.0	-.1	.0	.2	.1
.4	.3	.1	.2	.0	.1	.2	.2	.2	.2	.2	.2	.2	.4	.4	.3	.3	-.1	.0	.0	.1	.0	-.1	-.2	-.3	-.2	.0	.2	.1	.1	.0	.1	.0	.1	.3	.4
.4	.4	.4	.4	.2	-.1	.1	.3	.3	.0	.1	.2	.2	.4	.3	.3	.3	.2	.0	-.1	.0	-.1	-.1	-.3	-.2	-.5	.3	.8	.8	.4	.2	.2	.2	.3	.4	.5
.4	.3	.2	.2	.1	.0	-.1	.1	-.1	-.1	.0	.2	.2	.2	.2	.2	.2	.2	.0	.1	.0	-.1	-.2	.1	-.1	-1.2	-1.0	-.3	.7	.2	.1	.1	.2	.3	.4	.3
.1	.1	-.1	.0	.0	.0	-.1	.2	-.1	-.1	.0	.1	.1	.2	.2	.2	.1	.0	-.1	-.1	-.2	.0	-.1	-.2	.1	.2	-.1	-.4	.1	.0	.1	.1	.1	.1	.2	.1
.0	.0	-.2	-.1	-.1	.0	-.1	.0	.0	-.1	-.1	-.1	-.1	.0	.0	.0	.0	-.3	-.4	-.4	.1	.3	.0	.0	.0	.0	.0	-.2	-.1	.1	-.1	.0	-.1	.0	.0	.0
-.3	-.2	-.2	-.2	-.1	-.1	-.1	.0	.0	-.1	-.4	-.4	-.5	-.2	-.2	-.1	-.1	-.2	-.2	-.4	-.2	.4	.2	.0	-.1	-.1	-.3	-.4	-.3	-.4	-.4	-.3	-.4	-.4	-.4	-.4
-.4	-.3	-.2	-.1	-.1	.0	.0	.0	.0	.0	-.6	-.9	-.9	-.6	-.1	.0	.1	.1	-.1	-.5	-.8	-.2	-.1	-.2	-.3	-.3	-.3	-.4	-.5	-.5	-.4	-.7	-.9	-.8	-.6	-.6
-.4	-.4	-.3	-.3	-.1	.0	.0	.1	.0	.1	-.2	-.8	-.9	-.6	-.1	.0	.0	.0	-.1	-.4	-.5	-.6	-.5	-.2	-.1	-.1	.0	.0	-.1	-.1	-.3	-.3	-.5	-.2	-.4	-.5
-.2	-.2	-.1	-.2	-.1	-.1	.0	.1	.1	.1	.0	-.3	-.5	-.4	-.2	-.1	.0	.0	.0	-.1	-.2	-.2	-.4	-.2	.0	.0	.0	.1	.1	.2	.1	.1	.0	-.2	-.1	-.1
.0	.1	.1	.1	.0	-.1	.0	.1	.1	.2	.1	.0	.0	.0	.0	.0	.0	.1	.1	.1	.1	.1	.1	.0	.0	.1	.1	.1	.1	.1	.2	.1	.1	.0	.1	.0
.3	.3	.3	.3	.3	.2	.2	.2	.2	.3	.1	.3	.2	.2	.2	.2	.2	.2	.3	.3	.3	.3	.2	.3	.2	.3	.3	.3	.3	.3	.3	.3	.2	.2	.1	.2
.4	.4	.4	.5	.4	.4	.3	.3	.4	.4	.2	.2	.3	.4	.3	.3	.2	.3	.4	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.4	.3	.4	.3	.3	.3	.3
.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.3	.1	.1	.2	.2	.2	.3	.4	.4	.4	.3	.2	.1	-.3	.0	.2	.0	-.1	-.2	-.1	-.1	-.2	.0	.0	.2	.4
-.7	-.6	-.3	-.3	-.5	-.6	-.5	-.4	-.3	-.2	-.2	-.1	-.1	-.1	-.3	-.5	-.8	-1.9	-3.0	-3.6	-3.3	-3.2	-3.8	-3.5	-2.0	-2.0	-2.5	-3.5	-3.6	-3.5	-3.4	-2.8	-2.0	-1.5	-.5	-.7
-.7	-.6	-.6	-.5	-.6	-.8	-1.1	-1.4	-1.3	-.6	-.3	-.3	-.3	-.4	-.7	-1.1	-1.6	-2.1	-2.6	-2.9	-3.2	-3.5	-3.8	-4.2	-4.6	-4.6	-4.6	-4.5	-4.1	-3.7	-3.5	-3.3	-2.8	-1.7	-1.0	-.9

Figure 50. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-5 (700 hPa)
NOAA16, using all observations



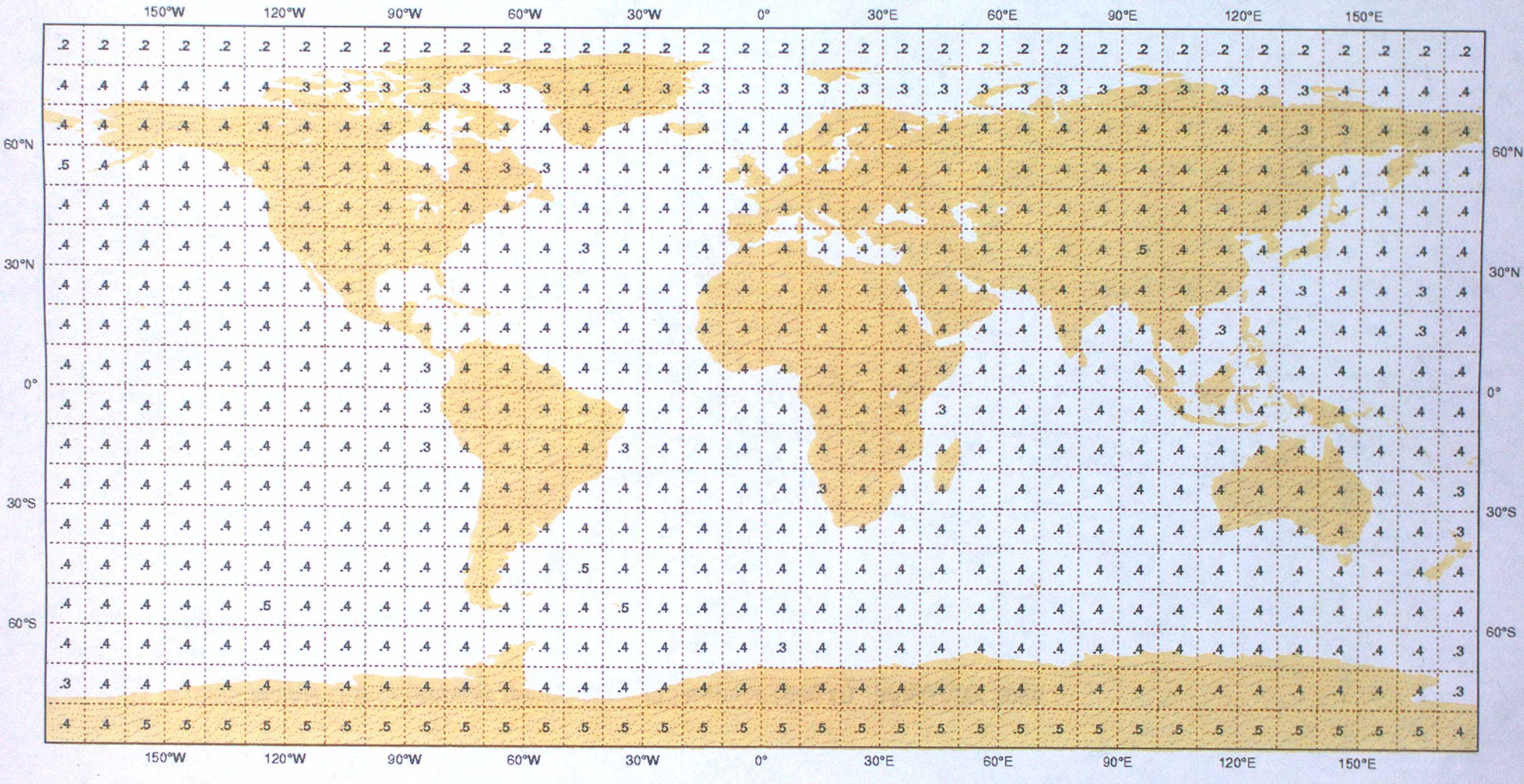
.4	.4	.3	.3	.4	.4	.4	.4	.4	.5	.5	.5	.9	1.3	1.5	.7	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.3	.4	.4	.4	.4	.4	.4	.5	.5	.5	.9	1.8	2.3	3.0	1.5	.6	.6	.5	.7	.5	.4	.4	.6	.5	.4	.4	.4	.5	.5	.4	.4	.4	.4	.4	.4
.5	.4	.7	.8	.9	.7	.5	.6	.5	.5	.5	.6	.7	2.0	1.5	.7	.6	.5	.6	.6	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.6	.7	.5	.6	.7
.4	.5	.6	.4	.7	.8	.7	.6	.4	.4	.5	.6	.5	.5	.5	.5	.6	.7	.6	.5	.5	.3	.3	.4	.3	.4	.5	.7	.6	.6	.5	.5	.5	.5	.5	.4
.4	.4	.4	.3	.4	.5	.8	.9	.5	.5	.4	.5	.4	.4	.4	.3	.3	.5	.5	.5	.4	.5	.7	.5	.5	1.4	1.3	1.1	.8	.6	.4	.4	.5	.4	.4	.4
.4	.4	.5	.4	.4	.4	.7	.7	.4	.5	.4	.4	.4	.4	.3	.3	.2	.5	.4	.5	.6	.6	.8	.9	.9	2.0	1.9	2.6	1.1	.5	.5	.6	.4	.4	.5	.4
.3	.4	.5	.5	.3	.3	.4	.7	.5	.5	.4	.3	.3	.4	.3	.3	.5	.5	.4	.5	.6	.7	.6	.7	.5	.6	1.0	1.1	.6	.4	.4	.4	.4	.4	.3	.3
.3	.3	.5	.4	.3	.3	.4	.4	.5	.5	.5	.5	.5	.4	.3	.4	.5	.6	.5	.7	.7	.7	.7	.4	.3	.5	.4	.4	.5	.3	.5	.4	.5	.4	.3	.3
.7	.5	.5	.4	.5	.5	.5	.5	.4	.5	.7	.7	.7	.5	.6	.4	.4	.5	.5	.6	.7	.9	.6	.4	.5	.5	.8	.7	.6	.7	.7	.7	.8	.8	.7	.6
.6	.5	.4	.4	.3	.2	.3	.2	.3	.3	.9	1.1	1.1	.9	.5	.3	.3	.3	.6	.9	1.2	1.0	.4	.6	.7	.7	.7	.7	.8	.8	.8	.9	1.0	1.0	.9	.8
.7	.7	.5	.5	.4	.3	.3	.2	.3	.3	1.0	1.4	1.1	.9	.4	.2	.3	.2	.3	1.1	1.1	1.0	.9	.5	.4	.6	.4	.4	.4	.5	1.0	.9	.9	.6	.7	.9
.7	.6	.5	.5	.4	.3	.3	.3	.3	.3	.4	1.5	1.1	.8	.6	.4	.3	.2	.3	.9	1.2	.8	1.0	.6	.3	.3	.3	.3	.3	.6	.8	.6	.8	.6	.5	.5
.4	.4	.3	.4	.4	.4	.3	.2	.3	.3	.5	1.3	1.0	.4	.5	.4	.4	.3	.3	.5	.8	.6	.5	.6	.5	.3	.3	.3	.3	.5	.5	.6	.8	.6	.4	.5
.4	.4	.3	.4	.4	.4	.3	.3	.3	.3	.6	.6	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.5	.5	.4	.4	.5	.5	.5	.5	.5	.5	.6	.5	.5	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.5
.5	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.7	.6	.6	.5	.5	.4	.4	.4	.5	.4	.5	.8	1.1	.8	.6	.8	1.1	1.1	.9	1.0	1.0	.8	.6	.5	.5
.7	.7	.6	.6	.9	1.1	.9	.7	.8	.7	.7	.7	.4	.5	.5	.8	1.1	1.6	2.0	2.4	2.5	2.4	2.3	2.0	1.7	1.6	1.9	2.2	2.1	1.9	1.8	1.7	1.5	1.4	.9	.7
.7	.6	.5	.7	.7	.7	.8	1.0	1.0	.7	.6	.6	.6	.7	.8	.9	.9	.9	1.0	1.1	1.3	1.4	1.4	1.6	1.7	1.8	1.9	1.9	1.7	1.4	1.2	1.2	1.0	1.1	.9	.8

Figure 51. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



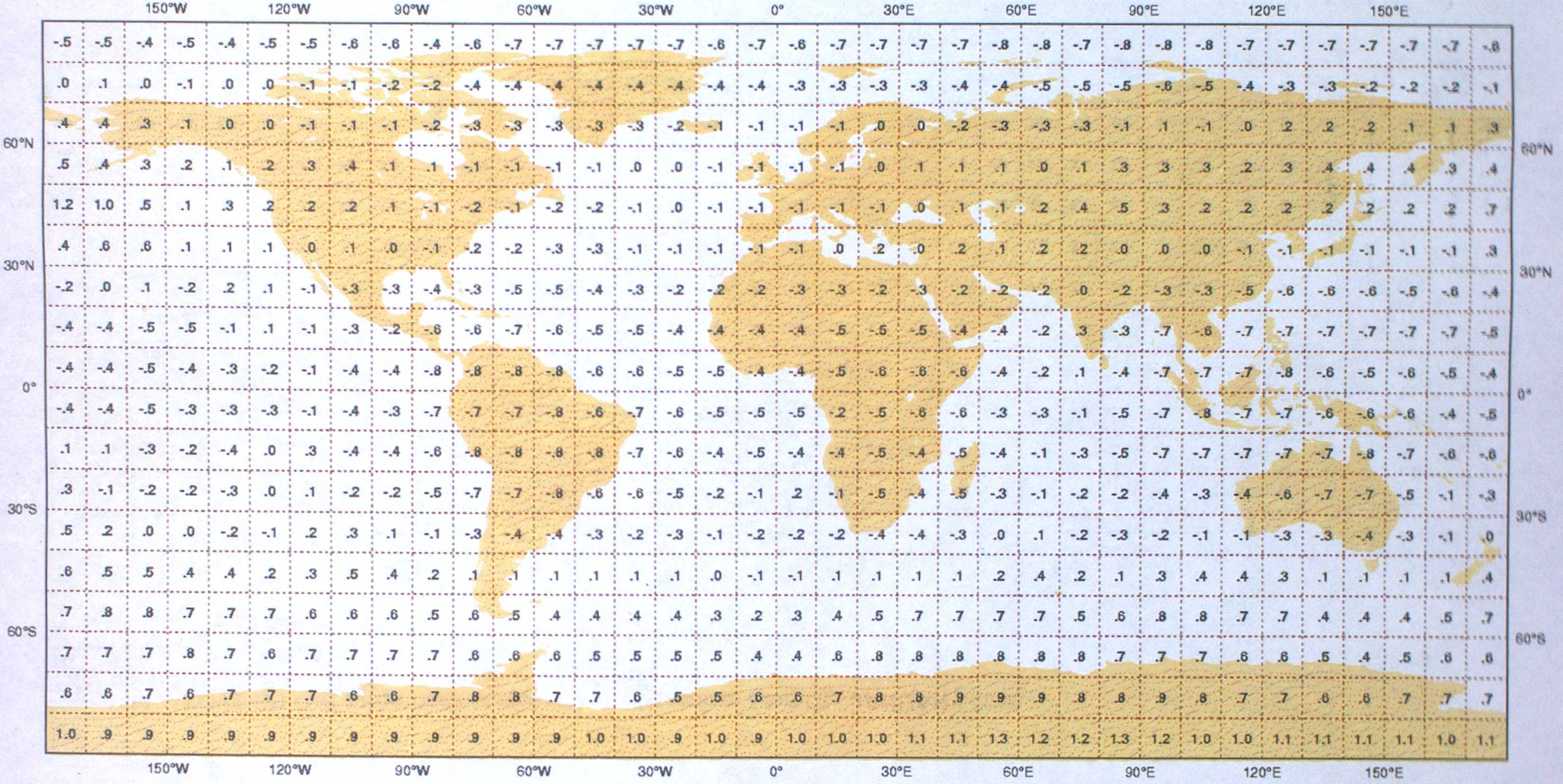
-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2
.0	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.2	-.1	-.1	.0	.0	.0	.0	.0	.0
.2	.1	.1	.2	.1	.1	.1	.1	.1	.1	.1	.0	.0	.0	.0	.0	-.1	-.1	-.1	.0	.1	.0	-.1	-.1	.0	.0	.1	.2	.2	.2	.3	.4	.4	.4	.4	.3
.4	.2	.1	.1	.1	.1	.1	.2	.2	.1	.2	.1	.1	.0	.0	.0	.0	-.1	.0	.1	.0	.0	.0	.1	.1	.2	.3	.3	.4	.5	.5	.6	.5	.5	.4	.3
.4	.4	.2	.1	.1	.1	.1	.1	.0	.2	.1	.1	.1	.0	.0	.0	.0	.0	.1	.1	.0	.0	.1	.2	.2	.2	.3	.4	.3	.5	.5	.5	.5	.4	.4	.4
.1	.2	.1	.0	.0	.0	.0	-.1	-.1	.0	-.1	-.1	.0	-.1	.0	.0	.0	.0	.1	.1	.0	.0	.1	.1	.2	.1	.1	.1	.1	.1	.2	.1	.1	.1	.1	.2
-.2	-.2	-.2	-.3	-.2	-.2	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	.0	-.1	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.3	-.3	-.2	-.3	-.2	-.3	-.3	-.3	-.3	-.2
-.3	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.2	-.2	-.3	-.3	-.3	-.4	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3
-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.4	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4
-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4
-.3	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.4	-.3	-.3	-.4	-.3	-.4	-.3	-.4	-.4
-.2	-.3	-.3	-.3	-.3	-.2	-.2	-.2	-.2	-.3	-.4	-.3	-.3	-.3	-.3	-.3	-.2	-.3	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3	-.3
-.1	-.1	-.1	-.1	-.2	-.2	-.1	-.1	-.1	-.1	-.2	-.1	-.2	-.1	-.1	-.1	-.1	-.1	-.2	-.2	-.2	-.1	-.1	-.2	-.2	-.2	-.2	-.2	-.2	-.1	-.1	-.1	-.1	-.1	-.1	-.2
.1	.2	.2	.1	.1	.1	.0	.0	.1	.1	.1	.2	.1	.1	.1	.1	.1	.1	.0	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.1	.0	.1	.0
.3	.4	.4	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4	.3	.3	.3	.4	.3	.2	.3	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.2
.5	.6	.6	.5	.4	.4	.4	.4	.4	.5	.5	.5	.5	.4	.5	.5	.5	.4	.4	.4	.5	.5	.5	.6	.6	.6	.5	.5	.5	.5	.5	.5	.4	.5	.5	.4
.5	.5	.5	.5	.4	.4	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.4	.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5
.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.7	.7	.7	.7	.6	.6	.6	.6	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	.8	.8	.7	.7

Figure 52. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-7 (300 hPa)
NOAA16, using all observations



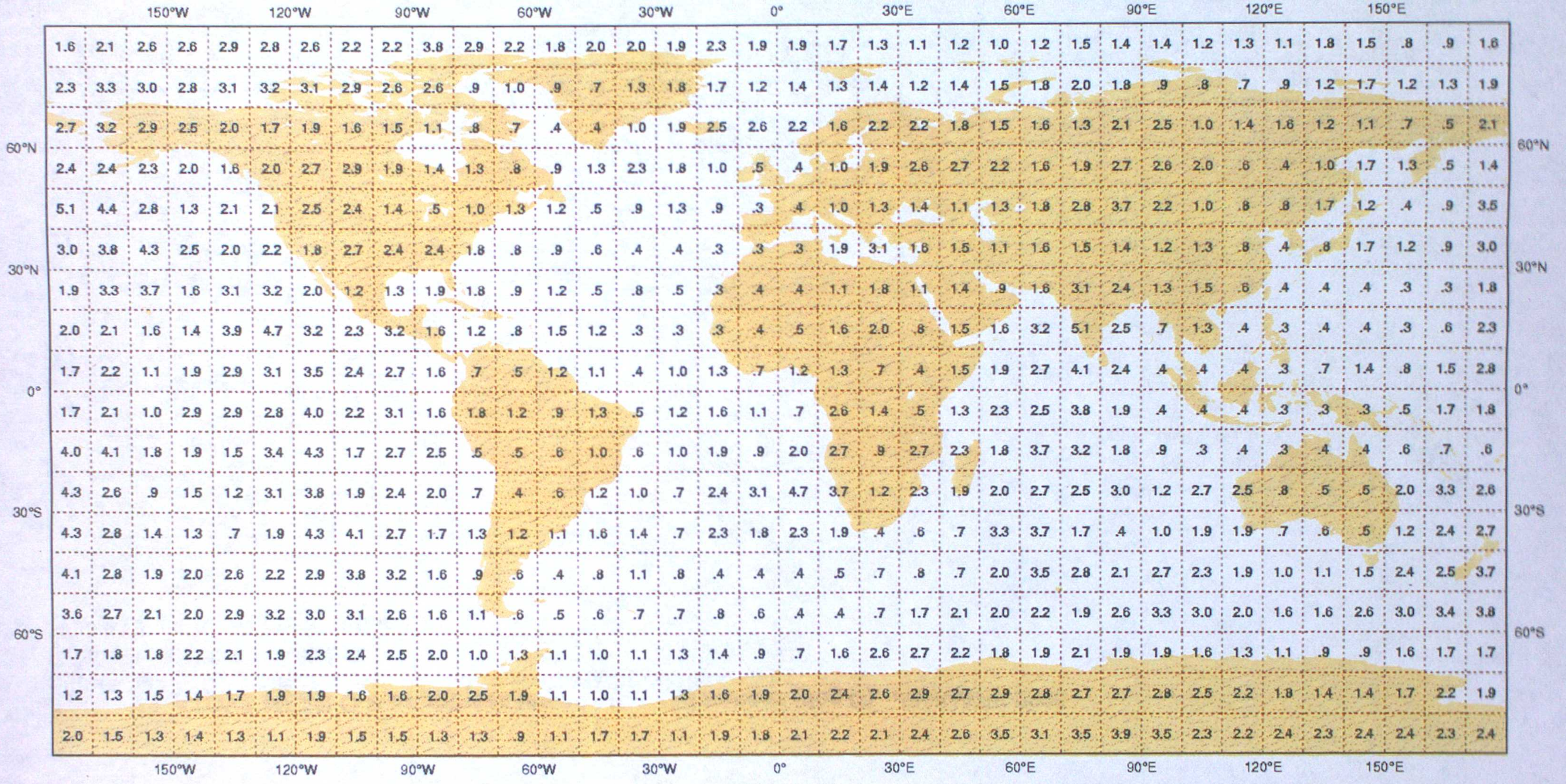
.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2	.2
.4	.4	.4	.4	.4	.4	.3	.3	.3	.3	.3	.3	.3	.4	.4	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.3	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4
.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.3	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.3	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.5	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4
.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3
.3	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	.3
.4	.4	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.5	.4

Figure 53. ATOVS MEAN O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



-.5	-.5	-.4	-.5	-.4	-.5	-.5	-.6	-.6	-.4	-.6	-.7	-.7	-.7	-.7	-.7	-.6	-.7	-.6	-.7	-.7	-.7	-.7	-.8	-.8	-.7	-.8	-.8	-.8	-.7	-.7	-.7	-.7	-.7	-.7	-.6
.0	.1	.0	-.1	.0	.0	-.1	-.1	-.2	-.2	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.4	-.3	-.3	-.3	-.3	-.4	-.4	-.5	-.5	-.5	-.6	-.5	-.4	-.3	-.3	-.2	-.2	-.2	-.1
.4	.4	.3	.1	.0	.0	-.1	-.1	-.1	-.2	-.3	-.3	-.3	-.3	-.3	-.2	-.1	-.1	-.1	-.1	.0	.0	-.2	-.3	-.3	-.3	-.1	.1	-.1	.0	.2	.2	.2	.1	.1	.3
.5	.4	.3	.2	.1	.2	.3	.4	.1	.1	-.1	-.1	-.1	-.1	.0	.0	-.1	-.1	-.1	-.1	.0	.1	.1	.1	.0	.1	.3	.3	.3	.2	.3	.4	.4	.4	.3	.4
1.2	1.0	.5	.1	.3	.2	.2	.2	.1	-.1	-.2	-.1	-.2	-.2	-.1	.0	-.1	-.1	-.1	-.1	-.1	.0	.1	.1	.2	.4	.5	.3	.2	.2	.2	.2	.2	.2	.2	.7
.4	.6	.6	.1	.1	.1	.0	.1	.0	-.1	-.2	-.2	-.3	-.3	-.1	-.1	-.1	-.1	-.1	.0	.2	.0	.2	.1	.2	.2	.0	.0	.0	-.1	-.1	-.1	-.1	-.1	-.1	.3
-.2	.0	.1	-.2	.2	.1	-.1	-.3	-.3	-.4	-.3	-.5	-.5	-.4	-.3	-.2	-.2	-.2	-.3	-.3	-.2	-.3	-.2	-.2	-.2	.0	-.2	-.3	-.3	-.5	-.6	-.6	-.6	-.5	-.6	-.4
-.4	-.4	-.5	-.5	-.1	.1	-.1	-.3	-.2	-.6	-.6	-.7	-.6	-.5	-.5	-.4	-.4	-.4	-.4	-.5	-.5	-.5	-.4	-.4	-.2	.3	-.3	-.7	-.6	-.7	-.7	-.7	-.7	-.7	-.7	-.5
-.4	-.4	-.5	-.4	-.3	-.2	-.1	-.4	-.4	-.8	-.8	-.8	-.8	-.6	-.6	-.5	-.5	-.4	-.4	-.5	-.6	-.6	-.6	-.4	-.2	.1	-.4	-.7	-.7	-.7	-.8	-.6	-.5	-.6	-.5	-.4
-.4	-.4	-.5	-.3	-.3	-.3	-.1	-.4	-.3	-.7	-.7	-.7	-.8	-.6	-.7	-.6	-.5	-.5	-.5	-.2	-.5	-.6	-.6	-.3	-.3	-.1	-.5	-.7	-.8	-.7	-.7	-.6	-.6	-.6	-.4	-.5
.1	.1	-.3	-.2	-.4	.0	.3	-.4	-.4	-.6	-.8	-.8	-.8	-.8	-.7	-.6	-.4	-.5	-.4	-.4	-.5	-.4	-.5	-.4	-.1	-.3	-.5	-.7	-.7	-.7	-.7	-.7	-.8	-.7	-.6	-.6
.3	-.1	-.2	-.2	-.3	.0	.1	-.2	-.2	-.5	-.7	-.7	-.8	-.6	-.6	-.5	-.2	-.1	.2	-.1	-.5	-.4	-.5	-.3	-.1	-.2	-.2	-.4	-.3	-.4	-.6	-.7	-.7	-.5	-.1	-.3
.5	.2	.0	.0	-.2	-.1	.2	.3	.1	-.1	-.3	-.4	-.4	-.3	-.2	-.3	-.1	-.2	-.2	-.2	-.4	-.4	-.3	.0	.1	-.2	-.3	-.2	-.1	-.1	-.3	-.3	-.4	-.3	-.1	.0
.6	.5	.5	.4	.4	.2	.3	.5	.4	.2	.1	.1	.1	.1	.1	.1	.0	-.1	-.1	.1	.1	.1	.1	.2	.4	.2	.1	.3	.4	.4	.3	.1	.1	.1	.1	.4
.7	.8	.8	.7	.7	.7	.6	.6	.6	.5	.6	.5	.4	.4	.4	.4	.3	.2	.3	.4	.5	.7	.7	.7	.7	.5	.6	.8	.8	.7	.7	.4	.4	.4	.5	.7
.7	.7	.7	.8	.7	.6	.7	.7	.7	.7	.6	.6	.6	.5	.5	.5	.5	.4	.4	.6	.8	.8	.8	.8	.8	.8	.7	.7	.7	.6	.6	.5	.4	.5	.6	.6
.6	.6	.7	.6	.7	.7	.7	.6	.6	.7	.8	.8	.7	.7	.6	.5	.5	.6	.6	.7	.8	.8	.9	.9	.9	.8	.8	.9	.8	.7	.7	.6	.6	.7	.7	.7
1.0	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	1.0	1.0	.9	1.0	.9	1.0	1.0	1.0	1.1	1.1	1.3	1.2	1.2	1.3	1.2	1.0	1.0	1.1	1.1	1.1	1.1	1.0	1.1

Figure 54. ATOVS SD O-B brightness temperature differences (deg C). JANUARY 2005
Channel: AMSUA-9 (100 hPa)
NOAA16, using all observations



1.6	2.1	2.6	2.6	2.9	2.8	2.6	2.2	2.2	3.8	2.9	2.2	1.8	2.0	2.0	1.9	2.3	1.9	1.9	1.7	1.3	1.1	1.2	1.0	1.2	1.5	1.4	1.4	1.2	1.3	1.1	1.8	1.5	.8	.9	1.6
2.3	3.3	3.0	2.8	3.1	3.2	3.1	2.9	2.6	2.6	.9	1.0	.9	.7	1.3	1.8	1.7	1.2	1.4	1.3	1.4	1.2	1.4	1.5	1.8	2.0	1.8	.9	.8	.7	.9	1.2	1.7	1.2	1.3	1.9
2.7	3.2	2.9	2.5	2.0	1.7	1.9	1.6	1.5	1.1	.8	.7	.4	.4	1.0	1.9	2.5	2.6	2.2	1.6	2.2	2.2	1.8	1.5	1.6	1.3	2.1	2.5	1.0	1.4	1.6	1.2	1.1	.7	.5	2.1
2.4	2.4	2.3	2.0	1.6	2.0	2.7	2.9	1.9	1.4	1.3	.8	.9	1.3	2.3	1.8	1.0	.5	.4	1.0	1.9	2.6	2.7	2.2	1.6	1.9	2.7	2.6	2.0	.6	.4	1.0	1.7	1.3	.5	1.4
5.1	4.4	2.8	1.3	2.1	2.1	2.5	2.4	1.4	.5	1.0	1.3	1.2	.5	.9	1.3	.9	.3	.4	1.0	1.3	1.4	1.1	1.3	1.8	2.8	3.7	2.2	1.0	.8	.8	1.7	1.2	.4	.9	3.5
3.0	3.8	4.3	2.5	2.0	2.2	1.8	2.7	2.4	2.4	1.8	.8	.9	.6	.4	.4	.3	.3	.3	1.9	3.1	1.6	1.5	1.1	1.6	1.5	1.4	1.2	1.3	.8	.4	.8	1.7	1.2	.9	3.0
1.9	3.3	3.7	1.6	3.1	3.2	2.0	1.2	1.3	1.9	1.8	.9	1.2	.5	.8	.5	.3	.4	.4	1.1	1.8	1.1	1.4	.9	1.6	3.1	2.4	1.3	1.5	.6	.4	.4	.4	.3	.3	1.8
2.0	2.1	1.6	1.4	3.9	4.7	3.2	2.3	3.2	1.6	1.2	.8	1.5	1.2	.3	.3	.3	.4	.5	1.6	2.0	.8	1.5	1.6	3.2	5.1	2.5	.7	1.3	.4	.3	.4	.4	.3	.6	2.3
1.7	2.2	1.1	1.9	2.9	3.1	3.5	2.4	2.7	1.6	.7	.5	1.2	1.1	.4	1.0	1.3	.7	1.2	1.3	.7	.4	1.5	1.9	2.7	4.1	2.4	.4	.4	.4	.3	.7	1.4	.8	1.5	2.8
1.7	2.1	1.0	2.9	2.9	2.8	4.0	2.2	3.1	1.6	1.8	1.2	.9	1.3	.5	1.2	1.6	1.1	.7	2.6	1.4	.5	1.3	2.3	2.5	3.8	1.9	.4	.4	.4	.3	.3	.3	.5	1.7	1.8
4.0	4.1	1.8	1.9	1.5	3.4	4.3	1.7	2.7	2.5	.5	.5	.6	1.0	.6	1.0	1.9	.9	2.0	2.7	.9	2.7	2.3	1.8	3.7	3.2	1.8	.9	.3	.4	.3	.4	.4	.6	.7	.6
4.3	2.6	.9	1.5	1.2	3.1	3.8	1.9	2.4	2.0	.7	.4	.6	1.2	1.0	.7	2.4	3.1	4.7	3.7	1.2	2.3	1.9	2.0	2.7	2.5	3.0	1.2	2.7	2.5	.8	.5	.5	2.0	3.3	2.6
4.3	2.8	1.4	1.3	.7	1.9	4.3	4.1	2.7	1.7	1.3	1.2	1.1	1.6	1.4	.7	2.3	1.8	2.3	1.9	.4	.6	.7	3.3	3.7	1.7	.4	1.0	1.9	1.9	.7	.6	.5	1.2	2.4	2.7
4.1	2.8	1.9	2.0	2.6	2.2	2.9	3.8	3.2	1.6	.9	.6	.4	.8	1.1	.8	.4	.4	.4	.5	.7	.8	.7	2.0	3.5	2.8	2.1	2.7	2.3	1.9	1.0	1.1	1.5	2.4	2.5	3.7
3.6	2.7	2.1	2.0	2.9	3.2	3.0	3.1	2.6	1.6	1.1	.6	.5	.6	.7	.7	.8	.6	.4	.4	.7	1.7	2.1	2.0	2.2	1.9	2.6	3.3	3.0	2.0	1.6	1.6	2.6	3.0	3.4	3.8
1.7	1.8	1.8	2.2	2.1	1.9	2.3	2.4	2.5	2.0	1.0	1.3	1.1	1.0	1.1	1.3	1.4	.9	.7	1.6	2.6	2.7	2.2	1.8	1.9	2.1	1.9	1.9	1.6	1.3	1.1	.9	.9	1.6	1.7	1.7
1.2	1.3	1.5	1.4	1.7	1.9	1.9	1.6	1.6	2.0	2.5	1.9	1.1	1.0	1.1	1.3	1.6	1.9	2.0	2.4	2.6	2.9	2.7	2.9	2.8	2.7	2.7	2.8	2.5	2.2	1.8	1.4	1.4	1.7	2.2	1.9
2.0	1.5	1.3	1.4	1.3	1.1	1.9	1.5	1.5	1.3	1.3	.9	1.1	1.7	1.7	1.1	1.9	1.8	2.1	2.2	2.1	2.4	2.6	3.5	3.1	3.5	3.9	3.5	2.3	2.2	2.4	2.3	2.4	2.4	2.3	2.4

TABLE 8

MONTHLY MONITORING OF MARINE SURFACE OBSERVATIONS (COSNA)
DATA TYPE:- DRIFTER
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from each unique identifier for drifting buoy.
Area monitored		:10°N - 80°N, 85°W - 0°W
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:All hours combined.
Elements monitored		:Mean sea-level pressure (hPa) :Wind speed ($m\ s^{-1}$) :Wind direction (degrees)
Parameters monitored	:NOBS	:Number of observations received excluding duplicates.
	:NGE	:Number of observations with gross errors.
	:PGE	:Percentage of observations with gross errors.
	:SD	:SD of difference of observations from background values excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values excluding those with gross errors. **N.B. A positive bias indicates the wind observation is veered to the background**
	:RMS	:Root Mean Square difference of observations from background values excluding those with gross errors

GROSS ERROR LIMITS :15 hPa (pressure)
:25 $m\ s^{-1}$ (Vector Wind)

N.B. Observations of wind direction are only included in the wind direction statistics if the observed OR background wind speed > 5 $m\ s^{-1}$

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
13534	37.1	-31.3	P	715	0	0	0.6	-0.4	0.7
41520	20.0	-67.4	P	1118	0	69	0.6	0.0	0.6
41521	18.4	-63.3	P	1043	0	68	0.8	-1.2	1.5
41539	23.9	-67.6	P	576	0	0	0.7	1.4	1.6
41540	38.9	-44.8	P	527	0	1	0.9	0.9	1.3
41541	24.4	-76.7	P	532	0	1	0.8	1.4	1.7
41542	27.9	-71.7	P	555	0	0	0.5	-0.1	0.6
41543	25.1	-72.4	P	568	0	0	0.5	-0.2	0.5
41544	22.4	-61.9	P	541	0	1	0.9	0.1	0.9
41545	23.9	-67.8	P	575	0	0	0.5	0.4	0.7
41548	18.7	-58.6	P	1259	0	54	0.9	0.9	1.2
41549	18.7	-58.6	P	1059	0	42	0.9	0.9	1.3
41551	15.1	-64.5	P	1047	0	40	0.9	0.3	1.0
41595	24.3	-44.0	P	565	0	14	0.8	1.3	1.5
41600	37.3	-42.0	P	183	0	1	1.1	-0.7	1.3
41601	45.3	-29.3	P	601	0	0	0.9	-0.5	1.0
41631	29.1	-67.4	P	349	0	2	1.3	0.8	1.5
41655	31.4	-56.7	P	23	0	4	1.5	1.1	1.8
41663	17.3	-62.7	P	992	0	67	0.8	-2.3	2.5
41664	13.9	-69.5	P	1340	0	66	0.8	-1.2	1.5
41665	15.3	-57.7	P	1246	0	69	0.8	-1.4	1.6
41666	16.0	-62.5	P	1032	0	66	0.7	-1.6	1.7
41920	21.6	-64.2	P	239	1	2	0.7	-0.2	0.8
41921	27.6	-74.5	P	244	0	100	2.1	4.2	4.7
41922	21.6	-71.4	P	175	10	61	5.7	5.2	7.8
41924	24.0	-73.4	P	242	2	5	1.1	-0.1	1.1
41925	22.5	-73.1	P	233	1	3	0.6	-0.2	0.7
41926	24.5	-66.6	P	224	0	16	2.4	0.7	2.5
41927	27.7	-71.3	P	260	0	3	1.0	-0.4	1.1
41929	28.9	-74.8	P	289	0	4	0.5	0.3	0.6
41931	33.5	-75.5	P	258	1	5	1.0	0.0	1.0
41932	22.6	-64.4	P	265	0	3	0.6	-0.2	0.7
41934	25.2	-65.0	P	266	1	4	1.0	-1.0	1.4
41935	23.3	-67.2	P	249	0	2	1.3	-0.6	1.5
41939	36.7	-62.2	P	278	1	10	1.5	-3.0	3.3
44547	59.4	-14.6	P	598	0	2	0.9	-0.2	0.9
44549	52.1	-37.0	P	607	1	5	1.4	0.7	1.6
44550	50.5	-41.4	P	619	0	0	1.0	0.0	1.0
44601	44.6	-45.1	P	665	0	0	0.9	-1.2	1.5
44607	40.6	-55.9	P	718	0	0	1.1	-0.3	1.1
44608	40.6	-49.9	P	716	0	0	0.8	-0.1	0.8
44612	55.3	-26.9	P	618	0	0	0.8	0.0	0.8
44617	50.8	-24.7	P	563	0	1	1.0	0.5	1.1
44623	27.6	-53.6	P	707	0	0	0.6	-0.1	0.6
44624	48.8	-28.6	P	534	0	1	1.3	-0.2	1.3
44625	60.3	-20.3	P	157	0	32	3.2	-2.6	4.1
44627	43.9	-20.2	P	523	0	0	1.0	0.3	1.0
44628	31.9	-26.2	P	668	0	0	0.5	-0.3	0.6
44630	28.9	-44.3	P	697	0	0	0.6	0.1	0.6
44721	52.7	-40.9	P	716	0	1	0.8	0.2	0.8
44722	43.3	-46.2	P	702	0	0	0.8	-0.3	0.8
44723	55.9	-38.1	P	710	0	1	0.8	-0.5	0.9
44725	50.7	-47.3	P	652	0	0	0.8	0.1	0.8
44726	48.6	-47.6	P	413	0	0	1.0	-0.2	1.0
44742	40.2	-16.2	P	534	0	0	0.5	-0.2	0.5
44743	44.1	-12.5	P	467	0	0	0.5	-0.2	0.5

44745	50.7	-10.4	P	713	0	1	0.6	-0.5	0.8
44761	55.4	-15.1	P	43	0	0	1.1	0.0	1.1
44766	49.8	-3.3	P	607	0	18	0.6	-0.5	0.8
44773	63.4	-15.5	P	273	0	23	1.0	-0.3	1.1

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
44775	52.5	-30.7	P	294	1	21	1.0	-0.5	1.1
44777	24.3	-55.0	P	276	0	14	0.7	-0.3	0.8
44778	31.2	-40.0	P	277	0	18	0.7	-0.2	0.7
44779	53.4	-13.3	P	267	0	25	1.3	-0.8	1.6
62510	37.7	-23.7	P	714	0	0	0.8	-0.1	0.8
62511	47.9	-13.4	P	629	0	1	1.0	0.2	1.0
62512	45.2	-13.7	P	687	0	1	0.6	0.0	0.6
62556	34.9	-20.4	P	703	1	2	0.5	-0.3	0.6
62557	40.8	-10.8	P	697	0	0	0.5	-0.3	0.6
62558	38.4	-16.4	P	434	0	0	0.5	-0.2	0.5
62560	43.6	-16.7	P	618	0	0	0.6	0.3	0.7
62562	50.9	-17.0	P	993	0	38	1.2	0.4	1.3
62563	55.5	-13.0	P	692	0	1	0.8	-0.3	0.9
62564	42.8	-18.3	P	709	0	1	0.5	0.1	0.5
62565	53.5	-10.6	P	359	0	1	0.9	0.0	0.9
62566	57.9	-20.1	P	703	0	2	1.0	0.0	1.0
62694	51.6	-12.0	P	490	0	6	1.2	0.7	1.3
62801	30.3	-34.8	P	680	0	1	0.7	0.0	0.7
64524	62.3	-53.8	P	375	6	23	3.5	0.0	3.5
64608	60.1	-58.8	P	676	0	2	1.4	1.2	1.9
64609	63.1	-31.8	P	715	0	1	1.0	0.2	1.0
64610	62.6	-18.1	P	643	0	0	0.9	0.5	1.0
64611	62.0	-27.9	P	478	0	1	1.0	0.1	1.0
64612	60.5	-30.9	P	466	0	0	0.9	-0.4	1.0

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41539	23.9	-67.6	SPEED	473	0	100	2.2	-0.8	2.4
41540	38.9	-44.8	SPEED	508	0	100	2.4	0.7	2.5
41541	24.4	-76.7	SPEED	37	0	100	2.8	2.9	4.0
41542	27.9	-71.7	SPEED	530	0	100	2.2	0.2	2.2
41543	25.1	-72.4	SPEED	544	0	100	1.7	-0.1	1.7
41544	22.4	-61.9	SPEED	525	0	100	1.7	0.0	1.7
41545	23.9	-67.8	SPEED	556	0	100	1.9	0.2	1.9
41595	24.3	-44.0	SPEED	256	0	100	2.6	-4.8	5.5
41920	21.6	-64.2	SPEED	8	38	100	8.0	-0.1	8.0
41921	27.6	-74.5	SPEED	221	1	100	3.1	-6.1	6.8
41922	21.6	-71.4	SPEED	203	90	100	8.6	20.4	22.2
41924	24.0	-73.4	SPEED	12	33	100	6.9	2.8	7.4
41925	22.5	-73.1	SPEED	223	2	100	3.5	-6.3	7.2
41926	24.5	-66.6	SPEED	190	1	100	2.5	0.9	2.6
41927	27.7	-71.3	SPEED	5	20	100	8.4	4.3	9.4
41929	28.9	-74.8	SPEED	1	0	100	0.0	11.4	11.4
41931	33.5	-75.5	SPEED	2	50	100	0.0	-1.5	1.5
41932	22.6	-64.4	SPEED	4	50	100	4.3	14.0	14.6
41935	23.3	-67.2	SPEED	3	100	0			
41939	36.7	-62.2	SPEED	1	0	100	0.0	12.4	12.4
62511	47.9	-13.4	SPEED	575	0	100	2.3	2.2	3.2
62565	53.5	-10.6	SPEED	313	0	100	2.3	5.2	5.7
62566	57.9	-20.1	SPEED	632	0	100	2.3	0.1	2.3

IDENTIFIER	LAT.	LONG.	ELEM	NOBS	PGE	%REJ	SD	BIAS	RMS
41539	23.9	-67.6	DIRN.	391	0	0	11.8	0.7	11.8
41540	38.9	-44.8	DIRN.	392	0	0	20.8	-10.1	23.1

41541	24.4	-76.7	DIRN.	37	0	0	16.6	-16.4	23.3
41542	27.9	-71.7	DIRN.	387	0	0	20.7	14.9	25.5
41543	25.1	-72.4	DIRN.	402	0	0	12.5	3.3	12.9
41544	22.4	-61.9	DIRN.	382	0	0	12.9	7.4	14.8
41545	23.9	-67.8	DIRN.	436	0	0	11.2	-2.4	11.5
41595	24.3	-44.0	DIRN.	3	0	0	16.8	-31.0	35.3
41920	21.6	-64.2	DIRN.	3	100	0			
41921	27.6	-74.5	DIRN.	5	40	0	63.3	-22.5	67.2
41922	21.6	-71.4	DIRN.	201	91	0	18.8	12.0	22.3
41924	24.0	-73.4	DIRN.	9	44	0	69.2	3.5	69.3
41925	22.5	-73.1	DIRN.	10	50	0	55.2	-5.4	55.4
41926	24.5	-66.6	DIRN.	154	1	0	27.2	7.7	28.3
41927	27.7	-71.3	DIRN.	4	25	0	58.7	68.7	90.4
41929	28.9	-74.8	DIRN.	1	0	0	0.0	-44.7	44.7
41931	33.5	-75.5	DIRN.	1	100	0			
41932	22.6	-64.4	DIRN.	4	50	0	16.8	14.1	21.9
41935	23.3	-67.2	DIRN.	3	100	0			
41939	36.7	-62.2	DIRN.	1	0	0	0.0	41.7	41.7
62511	47.9	-13.4	DIRN.	558	0	0	22.2	6.6	23.2
62565	53.5	-10.6	DIRN.	289	0	0	24.7	-11.6	27.3
62566	57.9	-20.1	DIRN.	588	0	0	14.6	2.3	14.8

TABLE 9

MONTHLY MONITORING OF AIRCRAFT OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures:

Period :One calendar month.

Data monitored :Statistics for each airline carrier.

Area monitored :40°N - 70°N, 60°W - 0°W.

Standard of comparison :Background field from UKMO global model.

Observation times :All hours combined.

Level(s) monitored :300.0 - 150.0 hPa

Elements monitored :TEMP in °C ; WIND in m s^{-1}

Parameters monitored :N REP. :Number of observations received excluding duplicates.

:PG :Percentage of observations with gross errors.

:PR :Percentage of observations rejected by quality control including rejections from the duplicate check.

:PC :Percentage of observations with calm winds.

:RMS :Root Mean Square difference of observations from background values excluding those with gross errors in Temperature & vector wind.

:BIAS :Mean difference of observations from background values excluding those with gross errors in Temperature & vector wind.

GROSS ERROR LIMITS :10.0 °C ; 60 m s^{-1} Vector Wind

SELECTION CRITERIA :N REP ≥ 20

NB : All American ACARS data are grouped together and statistics are shown at the bottom of the table as "US ACARS". All ADS reports are similarly grouped together.

	TEMPERATURE					WIND					
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
AAL	768	0	5	1.5	0.2	542	0	5	0	6.7	0.5
ACA	790	0	5	1.6	0.0	514	0	5	0	7.8	0.4
AEA	424	1	4	1.4	0.0	343	0	3	0	6.8	0.1
AFL	502	1	3	1.6	0.3	288	0	3	0	6.7	0.6
AFR	855	0	5	1.4	0.3	822	0	7	0	8.1	0.1
AJM	268	1	3	1.4	-0.3	223	0	4	0	7.2	0.7
AMT	149	1	7	1.6	0.4	150	1	9	0	7.6	0.4
AMX	327	1	4	1.7	0.1	282	0	44	0	8.0	-0.3
AUA	35	0	46	5.0	3.7	35	0	9	0	8.8	2.6
AZA	409	0	11	2.5	0.7	328	0	5	0	7.9	0.4
BAL	242	0	10	1.5	0.0	238	0	11	0	7.1	1.4
BAW	515	0	13	1.8	-0.6	338	0	14	0	7.4	0.3
BHP	43	0	5	1.5	-0.5	39	0	5	0	6.9	0.4
BPA	430	1	100	1.9	0.5	436	1	11	0	7.1	-0.3
BSK	44	0	5	2.1	-0.2	27	0	33	0	15.1	1.3
BWA	181	1	7	1.7	-0.3	160	0	3	0	6.9	0.4
CFC	28	0	4	1.4	-0.1	28	0	7	0	6.7	1.1
CFG	567	0	3	1.2	0.3	486	0	5	0	7.5	0.2
CKS	136	1	8	1.4	-0.1	98	0	4	0	8.2	0.7
CLX	247	0	2	1.4	-0.6	174	1	7	0	8.5	-0.3
COA	90	1	38	1.6	0.0	70	1	34	0	9.0	2.0
CRL	437	1	6	1.5	0.4	413	0	6	0	8.6	0.3
CUB	128	2	9	1.9	-0.5	116	1	9	0	8.7	1.3
DAL	917	0	10	1.4	-0.5	674	0	10	0	7.0	0.6
DCS	32	0	6	2.2	-0.8	22	0	5	0	7.3	0.5
DHL	137	1	100	6.5	-6.2	75	0	32	0	14.4	0.5
DLH	419	1	11	1.5	0.2	406	0	12	0	7.8	0.0
DRD	57	2	5	1.9	0.0	57	0	56	0	11.1	0.9
EDW	48	2	4	1.4	-0.2	43	0	5	0	7.1	1.4
EEZ	105	2	11	1.6	-0.3	107	0	13	0	7.8	1.6
EIA	289	0	12	1.4	0.4	273	0	100	0	21.5	3.4
EIN	44	2	9	2.0	1.1	28	0	4	0	5.6	0.5
ELY	71	0	3	1.7	0.2	51	0	6	0	8.3	0.3
ETH	41	0	5	1.5	0.3	37	0	3	0	6.2	1.1
FCA	107	0	7	2.0	0.2	87	0	6	0	9.1	1.8
FDX	536	1	39	1.4	0.2	386	1	37	0	9.9	-0.7
FIN	299	0	6	1.5	0.2	227	0	7	0	7.7	0.3
FWI	238	0	3	1.4	-0.4	245	0	4	0	6.4	0.6
GCO	132	2	15	1.3	0.1	133	0	23	0	10.5	1.1
GRL	71	0	1	1.6	0.5	65	0	0	0	5.5	1.4
GTI	225	0	14	2.4	1.0	215	0	16	0	8.8	0.6
HXL	260	0	3	1.2	-0.1	217	0	5	0	7.4	0.9
IBE	1433	0	6	1.5	0.3	1435	0	8	0	8.1	0.5
ICE	791	0	2	1.4	-0.1	485	0	2	0	6.4	1.0
IWD	108	0	1	1.5	-0.3	104	0	6	0	11.2	-0.7
KLM	758	0	2	1.4	-0.1	575	0	3	0	7.9	0.4
LAN	31	0	16	2.2	0.1	31	0	13	0	7.5	1.6
LDI	240	0	3	1.8	0.0	205	0	4	0	8.5	0.2
LOT	205	1	4	1.7	-0.3	132	0	2	0	5.9	-0.5
LTU	697	1	7	1.6	-0.3	522	1	5	0	7.3	0.6
MMZ	36	0	8	1.8	1.2	37	0	8	0	6.6	2.3
MON	40	0	5	1.0	-0.3	35	0	11	0	10.7	0.1
MPD	86	0	3	1.7	0.6	80	0	3	0	5.5	0.5
MPH	424	0	1	1.5	-0.6	314	0	3	0	6.9	0.1
MYT	143	1	3	1.7	0.1	96	2	9	0	8.0	-0.9
NAO	92	0	7	1.6	-0.3	90	0	12	0	9.3	0.3
NCA	28	0	4	1.2	0.3	26	0	4	0	5.6	-0.4

NOS	43	0	0	0.9	-0.1	35	0	3	0	6.6	0.5
NVR	42	0	2	1.4	-0.2	29	3	10	0	11.4	0.7

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
NWA	1372	0	3	1.8	0.5	1327	0	9	0	10.7	0.3
OAE	315	0	10	1.4	0.1	221	0	68	0	17.1	4.2
OOM	68	0	9	2.0	-1.4	50	0	4	0	7.8	-0.3
PAC	152	1	9	1.8	-0.3	120	2	8	0	7.3	-0.2
PLM	112	0	5	2.0	1.4	103	2	12	0	10.6	-1.3
RAM	242	1	3	1.6	0.1	164	1	51	0	11.7	0.8
RCH	221	3	100	3.6	-1.0	185	1	100	0	11.5	2.5
RJA	46	0	0	1.3	-0.4	28	0	0	0	5.2	1.9
RZO	166	0	3	1.6	-0.6	138	0	3	0	7.0	0.3
SEU	105	0	9	1.9	0.2	93	0	6	0	9.0	2.1
SLM	39	0	3	1.1	0.8	40	0	3	0	4.8	-0.6
TAP	228	0	3	1.5	-0.2	181	0	3	0	8.2	0.0
TPA	33	3	9	0.9	0.5	27	0	11	0	7.3	1.2
TSC	65	2	2	1.2	-0.4	42	0	5	0	10.0	0.0
TSO	29	0	10	1.2	-0.7	30	0	10	0	4.8	-0.5
TUB	84	0	11	1.9	0.5	86	0	17	0	9.0	0.2
UAL	87	1	52	1.9	-0.4	84	0	57	0	14.0	2.1
UPS	675	0	51	1.6	0.6	656	0	51	0	7.5	0.2
USA	120	0	3	2.1	0.5	99	0	4	0	10.1	-0.2
VIR	170	1	3	1.6	-0.2	108	0	1	0	5.5	0.7
WOA	347	1	12	1.4	0.2	297	0	19	0	9.7	2.0
XLA	72	1	1	0.8	-0.1	68	0	1	0	7.3	-0.2

		TEMPERATURE						WIND			
IDENT.	N.REP.	PG	PR	RMS	BIAS	N.REP.	PG	PR	PC	RMS	BIAS
EU	27159	0	21	1.2	0.2	27159	0	20	0	4.5	0.5
TN	28	4	14	1.6	0.4	28	0	21	0	9.8	-1.0
N	310	1	10	2.7	0.4	198	0	8	0	11.2	0.6
US ACARS	19756	0	34	1.4	0.2	19756	0	28	0	5.0	0.5

TABLE 10

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ANNE	12	Z	100	1	0	0.0	16.0	-16.0
EBUQ	12	Z	100	14	2	10.8	16.8	12.9
ELML7	00	Z	100	12	0	11.4	16.6	12.0
ELML7	12	Z	100	13	0	17.8	24.2	16.4
FQFL	00	Z	100	8	0	14.6	34.6	-31.4
FQFL	12	Z	100	10	0	11.7	23.0	-19.8
FQFM	00	Z	100	5	0	18.3	19.5	-6.8
FQFM	12	Z	100	10	0	30.6	30.6	-0.5
HPII	00	Z	100	8	0	34.3	59.8	-49.0
HPII	12	Z	100	9	0	9.3	17.2	-14.6
KHRH	00	Z	100	1	0	0.0	36.0	36.0
KHRH	12	Z	100	1	0	0.0	34.0	34.0
KRPD	00	Z	100	1	0	0.0	30.0	30.0
KRPD	12	Z	100	3	0	7.9	41.7	41.0
LDWR	00	Z	100	25	0	12.6	20.1	-15.7
LDWR	12	Z	100	28	0	17.2	19.2	-8.7
OXTS2	00	Z	100	3	0	125.4	148.0	-78.7
OXTS2	12	Z	100	2	0	15.0	23.4	18.0
OXYH2	00	Z	100	2	0	13.5	17.7	11.5
OXYH2	12	Z	100	2	0	12.0	19.2	15.0
V2XM	00	Z	100	4	0	28.9	31.1	11.5
V2XM	12	Z	100	7	0	15.3	17.6	8.7
WAAH	00	Z	100	9	0	23.4	37.1	28.8
WAAH	12	Z	100	7	0	34.6	37.3	13.9
WPKD	00	Z	100	7	0	15.4	18.5	10.3
WPKD	12	Z	100	9	0	58.6	61.8	-19.6
ZCBF3	00	Z	100	5	0	3.9	9.6	-8.8
ZCBF3	12	Z	100	7	0	19.6	20.2	-4.7
ZCBP6	00	Z	100	5	0	16.2	36.8	33.0
ZCBP6	12	Z	100	4	1	95.5	98.3	-23.3
03953	00	Z	100	27	0	20.9	21.0	2.0
03953	12	Z	100	30	0	20.4	23.7	12.0
04018	00	Z	100	26	0	13.9	14.4	3.7
04018	12	Z	100	30	0	20.0	20.7	5.5
04220	00	Z	100	26	0	21.1	21.1	0.2
04220	12	Z	100	27	1	26.0	26.5	-4.8
04270	00	Z	100	26	0	16.9	17.0	1.4
04270	12	Z	100	28	0	18.2	18.2	-1.2
04339	00	Z	100	22	1	19.7	20.3	5.0
04339	12	Z	100	25	1	12.6	12.7	-0.8
04360	00	Z	100	25	0	20.5	21.3	-5.8
04360	12	Z	100	30	0	15.5	16.3	-5.1
08001	00	Z	100	19	1	21.5	21.5	0.6
08001	12	Z	100	22	1	12.3	25.9	22.9
08508	00	Z	100	20	0	14.5	27.9	23.8
08508	12	Z	100	29	0	17.3	26.8	20.4
08522	12	Z	100	23	0	11.1	27.2	24.9
08594	12	Z	100	23	0	16.3	18.4	8.7
71600	00	Z	100	26	0	16.7	20.3	-11.5
71600	12	Z	100	30	0	14.2	17.9	-10.9
72201	00	Z	100	26	0	12.0	28.2	25.6
72201	12	Z	100	31	0	9.6	23.2	21.2
72402	00	Z	100	26	0	10.5	26.6	24.4
72402	12	Z	100	31	0	15.9	16.0	-1.9
74494	00	Z	100	23	0	12.5	12.6	-1.4

74494	12	Z	100	30	0	12.2	19.5	-15.1
78016	00	Z	100	26	0	11.7	34.5	32.5
78016	12	Z	100	30	0	11.2	37.1	35.3

TABLE 11

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures:

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:GEOPOTENTIAL HEIGHT in metres
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:SD	:SD of difference of observations from background values at level shown excluding those with gross errors.
	:BIAS	:Mean difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.1

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	SD	RMS	BIAS
ANNE	12	Z	500	1	0	0.0	4.0	-4.0
EBUQ	12	Z	500	21	0	5.7	5.7	0.2
ELML7	00	Z	500	12	0	9.5	11.3	-6.2
ELML7	12	Z	500	13	0	7.0	7.8	-3.5
FQFL	00	Z	500	9	0	9.4	21.7	-19.6
FQFL	12	Z	500	10	0	8.7	16.7	-14.3
FQFM	00	Z	500	7	0	10.7	17.4	-13.7
FQFM	12	Z	500	12	0	11.5	14.8	-9.3
HPII	00	Z	500	8	0	19.6	50.4	-46.5
HPII	12	Z	500	9	0	7.6	33.4	-32.6
KHRH	00	Z	500	1	0	0.0	29.0	29.0
KHRH	12	Z	500	1	0	0.0	37.0	37.0
KRPD	00	Z	500	1	0	0.0	21.0	21.0
KRPD	12	Z	500	4	0	41.9	59.5	42.3
LDWR	00	Z	500	25	0	10.5	14.8	-10.4
LDWR	12	Z	500	29	0	10.2	13.8	-9.3
OXTS2	00	Z	500	2	1	8.0	20.6	19.0
OXTS2	12	Z	500	2	0	3.5	19.8	19.5
OXYH2	00	Z	500	3	0	1.6	6.2	6.0
OXYH2	12	Z	500	2	0	6.0	18.0	17.0
V2XM	00	Z	500	4	0	16.0	23.9	17.8
V2XM	12	Z	500	7	0	9.3	16.0	13.0
WAAH	00	Z	500	10	0	13.3	19.7	14.6
WAAH	12	Z	500	8	0	18.6	22.2	12.0
WPKD	00	Z	500	7	0	12.3	13.1	-4.3
WPKD	12	Z	500	9	0	32.3	36.0	-15.9
ZCBF3	00	Z	500	5	0	4.6	16.7	-16.0
ZCBF3	12	Z	500	7	0	11.8	25.4	-22.4
ZCBP6	00	Z	500	5	0	8.7	30.5	29.2
ZCBP6	12	Z	500	8	1	8.5	28.9	27.6
03953	00	Z	500	27	0	9.9	9.9	-0.7
03953	12	Z	500	31	0	8.6	9.6	4.2
04018	00	Z	500	27	0	8.6	8.9	2.4
04018	12	Z	500	30	0	7.8	8.9	4.4
04220	00	Z	500	26	0	6.8	7.0	-1.7
04220	12	Z	500	27	1	12.0	13.2	-5.6
04270	00	Z	500	27	0	7.8	7.8	1.1
04270	12	Z	500	29	0	8.3	8.4	0.9
04339	00	Z	500	23	1	20.5	20.6	2.0
04339	12	Z	500	26	2	9.2	9.3	1.3
04360	00	Z	500	26	1	11.3	11.3	-0.2
04360	12	Z	500	30	0	10.7	10.7	-1.1
08001	00	Z	500	19	1	12.7	14.0	-5.9
08001	12	Z	500	26	1	10.1	10.7	3.6
08508	00	Z	500	21	0	8.6	11.0	-6.9
08508	12	Z	500	30	0	9.5	9.6	-1.1
08522	12	Z	500	24	0	7.1	7.8	3.2
08594	12	Z	500	27	0	8.2	8.4	-1.9
71600	00	Z	500	26	0	7.1	9.4	-6.2
71600	12	Z	500	30	0	9.5	11.1	-5.7
72201	00	Z	500	26	0	5.5	5.8	-2.0
72201	12	Z	500	31	0	5.4	7.0	-4.4
72402	00	Z	500	26	0	6.8	7.3	2.8
72402	12	Z	500	31	0	7.2	7.2	-0.2
74494	00	Z	500	24	0	6.6	6.8	-1.7

74494	12	Z	500	31	0	9.7	10.9	-4.9
78016	00	Z	500	26	0	6.7	10.8	8.5
78016	12	Z	500	31	0	5.9	10.3	8.4

TABLE 12

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:100 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS	:Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ANNE	12	V	100	1	0	0	1.3	0.2	-1.3
EBUQ	12	V	100	10	0	100	8.9	-0.8	3.0
ELML7	00	V	100	11	0	100	12.0	-0.1	-1.3
ELML7	12	V	100	12	0	100	11.5	0.9	1.0
FQFL	00	V	100	8	0	0	4.1	-0.9	-0.5
FQFL	12	V	100	10	0	0	4.4	-0.8	-1.5
FQFM	00	V	100	5	0	0	5.5	-0.5	-2.5
FQFM	12	V	100	10	0	0	6.0	-2.2	2.1
HPII	00	V	100	8	0	0	4.6	-2.1	0.9
HPII	12	V	100	9	0	0	4.0	0.9	1.3
KHRH	00	V	100	1	0	100	7.4	3.9	-6.2
KRPD	12	V	100	1	0	100	7.3	-6.1	3.9
LDWR	00	V	100	24	0	0	3.5	-0.7	0.2
LDWR	12	V	100	28	0	0	3.0	-0.8	-0.7
OXTS2	00	V	100	3	0	0	4.4	1.8	-3.7
OXTS2	12	V	100	1	0	0	4.5	4.5	0.0
OXYH2	12	V	100	2	0	0	3.3	-0.5	1.3
V2XM	00	V	100	4	0	75	3.0	-1.7	0.0
V2XM	12	V	100	6	0	50	3.3	0.6	1.6
WAAH	00	V	100	9	0	100	10.2	1.5	1.1
WAAH	12	V	100	4	0	100	10.3	6.7	0.9
WPKD	00	V	100	7	0	0	6.8	-3.1	0.8
WPKD	12	V	100	9	0	0	5.1	0.4	-1.4
ZCBF3	00	V	100	1	0	0	2.9	-2.8	-0.7
ZCBP6	00	V	100	3	0	33	7.2	2.3	1.2
ZCBP6	12	V	100	1	0	100	8.2	8.0	-1.4
03953	00	V	100	26	0	0	3.9	-0.8	0.0
03953	12	V	100	30	0	0	4.1	0.8	-0.8
04018	00	V	100	25	0	0	3.6	0.0	-0.5
04018	12	V	100	30	0	0	3.6	0.4	0.3
04220	00	V	100	26	0	0	3.2	0.2	-0.5
04220	12	V	100	26	0	0	3.0	0.1	-0.1
04270	00	V	100	25	0	0	4.2	-0.4	0.5
04270	12	V	100	25	0	0	4.7	1.9	0.3
04339	00	V	100	18	0	11	7.0	-2.2	-0.4
04339	12	V	100	23	0	0	4.1	0.8	-1.1
04360	00	V	100	24	0	0	4.1	1.6	-0.4
04360	12	V	100	28	0	3	4.9	0.3	0.7
08001	00	V	100	19	0	0	4.0	1.2	-0.4
08001	12	V	100	23	0	0	3.8	-0.5	-0.3
08508	00	V	100	10	0	0	4.7	-0.7	0.5
08508	12	V	100	16	0	0	4.3	0.2	0.0
08522	12	V	100	23	0	0	4.3	-0.1	0.0
08594	12	V	100	22	0	100	6.7	-0.7	4.7
71600	00	V	100	25	0	0	3.5	0.2	1.6
71600	12	V	100	30	0	0	4.3	-1.4	1.7
72201	00	V	100	26	0	0	3.9	0.2	0.2
72201	12	V	100	31	0	0	4.0	1.0	1.1
72402	00	V	100	26	0	0	3.9	-0.5	0.8
72402	12	V	100	31	0	0	3.7	-0.1	-0.1
74494	00	V	100	22	0	100	5.0	-1.5	1.1
74494	12	V	100	28	0	100	8.2	-2.8	0.9
78016	00	V	100	26	0	0	5.1	0.8	0.6
78016	12	V	100	30	0	0	5.7	0.2	1.2

TABLE 13

MONTHLY MONITORING OF RADIOSONDE OBSERVATIONS (COSNA)
MONITORING CENTRE: EXETER
MONTH: Jan 2005

Monitoring procedures

Period		:One calendar month.
Data monitored		:Reports from selected radiosonde TEMPs.
Area monitored		:0°N - 90°N, 100°W - 40°E
Standard of comparison		:Background field from UKMO global model.
Position		:Average latitude and longitude for period.
Observation times		:00, 12 UTC.
Level monitored		:500 hPa.
Element monitored		:VECTOR WIND in m s^{-1}
Parameters monitored	:NUM OBS	:Number of observations available at level shown during period.
	:NUM GROSS	:Number of gross errors at level shown during period.
	:UBIAS,VBIAS:	Mean difference of observations of U and V components from background values at level shown excluding those with gross errors.
	:RMS	:Root Mean Square difference of observations from background values at level shown excluding those with gross errors.

GROSS ERROR LIMITS :Defined in Appendix I.2

WMO IDENT	OBS TIME	ELM	LEV	NUM OBS	NUM GROSS	% REJ	RMS	UBIAS	VBIAS
ANNE	12	V	500	1	0	0	2.3	1.7	1.5
EBUQ	12	V	500	16	0	100	6.9	-0.1	-0.8
ELML7	00	V	500	12	0	100	9.2	-0.1	0.2
ELML7	12	V	500	13	0	100	8.4	-1.2	0.0
FQFL	00	V	500	9	0	0	3.0	0.7	-0.3
FQFL	12	V	500	10	0	0	3.6	-0.4	-0.6
FQFM	00	V	500	7	0	0	4.5	-1.2	1.5
FQFM	12	V	500	12	0	0	3.4	-1.4	-0.5
HPII	00	V	500	8	0	0	6.6	-0.2	0.9
HPII	12	V	500	9	0	0	5.4	0.2	0.9
KHRH	00	V	500	1	0	100	8.0	6.4	-4.9
KRPD	12	V	500	1	0	100	8.3	-7.2	4.1
LDWR	00	V	500	25	0	0	4.9	0.7	-1.1
LDWR	12	V	500	29	0	0	4.6	0.1	-0.3
OXTS2	00	V	500	3	0	0	4.7	-2.5	-0.3
OXTS2	12	V	500	1	0	0	1.2	-0.4	-1.1
OXYH2	00	V	500	1	0	0	1.5	1.2	0.9
OXYH2	12	V	500	1	0	0	7.6	-3.5	6.8
V2XM	00	V	500	4	0	0	5.5	-1.8	-0.4
V2XM	12	V	500	7	0	0	4.9	-0.9	1.2
WAAH	00	V	500	10	0	100	9.0	4.3	1.9
WAAH	12	V	500	6	0	100	10.7	4.9	1.0
WPKD	00	V	500	7	0	0	4.6	-0.6	1.2
WPKD	12	V	500	9	0	0	3.8	-0.2	0.3
ZCBF3	00	V	500	1	0	0	6.4	0.2	6.4
ZCBP6	00	V	500	3	0	33	9.2	-0.2	-1.8
ZCBP6	12	V	500	4	0	75	10.3	8.7	-1.2
03953	00	V	500	27	0	0	4.6	0.1	1.2
03953	12	V	500	31	0	0	4.4	0.4	0.2
04018	00	V	500	27	0	0	4.1	0.2	-0.3
04018	12	V	500	30	0	0	5.6	1.4	0.6
04220	00	V	500	26	0	0	3.8	0.2	-1.2
04220	12	V	500	28	0	0	4.6	-0.6	-1.0
04270	00	V	500	27	0	0	4.9	0.4	0.4
04270	12	V	500	29	0	0	6.4	2.5	0.4
04339	00	V	500	19	0	0	4.8	0.1	0.4
04339	12	V	500	24	0	8	6.9	0.9	1.3
04360	00	V	500	27	0	0	5.3	-0.9	0.5
04360	12	V	500	30	0	0	4.4	0.2	0.0
08001	00	V	500	20	0	0	4.8	0.1	-0.7
08001	12	V	500	26	0	3	4.7	1.1	0.6
08508	00	V	500	11	0	0	4.5	-0.2	1.4
08508	12	V	500	17	0	0	3.4	-0.3	0.3
08522	12	V	500	24	0	0	4.0	-0.9	0.4
08594	12	V	500	27	0	100	4.6	-0.8	2.4
71600	00	V	500	26	0	0	4.2	-0.1	0.2
71600	12	V	500	30	0	0	4.2	1.3	-0.2
72201	00	V	500	26	0	0	2.9	-0.1	0.3
72201	12	V	500	31	0	0	2.7	-0.3	-0.8
72402	00	V	500	26	0	0	3.4	1.3	-0.3
72402	12	V	500	31	0	0	3.2	0.7	0.3
74494	00	V	500	24	0	0	4.0	-1.2	1.3
74494	12	V	500	30	0	0	4.5	-0.7	1.3
78016	00	V	500	26	0	0	4.1	0.6	0.9
78016	12	V	500	31	0	0	3.3	0.8	0.3

APPENDIX I

1. The gross error limits for observation minus background differences of geopotential height in Tables 5, 10 and 11 are:-

Level (hPa)	Geopotential height (metres)
1000	100
850	100
700	100
500	150
400	175
300	200
250	225
200	250
150	275
100	300
70	375
50	400
30	450

The weighted RMS values used in Table 5,10 and 11 are calculated using the following weights:-

Level (hPa)	Weight
1000	3.70
850	3.40
700	2.90
500	2.20
400	1.90
300	1.60
250	1.50
200	1.37
150	1.19
100	1.00
70	0.87
50	0.80
30	0.64

2. The gross error limits for observation minus background differences of windspeed in Tables 6,12 and 13 are:-

Level (hPa)	Windspeed m s^{-1}
1000	35
850	35
700	40
500	45
400	50
300	60
250	60
200	50
150	50
100	45